STUDY OF DORYLAIM NEMATODES

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SUPERVISOR

This is to certify that the entire research work presented in the thesis entitled, "Study of dorylaim nematodes" by Mr. Wasim Ahmad is original and was carried out under my supervision. I have allowed Mr. Ahmad to submit it to the Aligarh Muslim University in fulfilment of the requirements for the degree of Doctor of Philosophy in Zoology.

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TABLE OF CONTENTS

INTRODUCTION

Nematodes of the Order Dorylaimida, commonly referred to as dorylaims, constitute one of the largest groups among the soil-inhabiting nematodes. They may be either free-living phytophagous or predacious. Those belonging to the superfamilies Longidoroidea and Trichodoroidea are important plant-parasites and some of those may act as vectors of soil-borne viral diseases of the plants. The members of the superfamilies Mylolaimoidea, Actinolaimoidea and some species of the Dorylaimoidea are predatory in habit and may be helpful in the biological control of plant-parasitic nematodes. Other groups are either free-living or suspected plant-parasites. Taxonomic study of these nematodes is of basic importance before further research on their biology, pathogenecity, host-parasite relationship, control, etc., could be initiated.

The oldest description of dorylaim nematode dates back to the year 1845, when Dujardin described a species and named it Dorylaimus stagnalis. De Man (1876) proposed the family Dorylaimidae for the genus Dorylaimus. Örley (1880), De Man (1880), Cobb (1913, '20) added several genera to this family. Filipjev (1918, '28, '34) classified these genera under four subfamilies, viz., Alaiminae, Ironinae, Dorylaiminae and Aylencholaiminae. Thorne (1934) raised Dorylaimidae to the rank

of a superfamily Dorylaimoidea with families Dorylaimidae and Alaimidae. Under Dorylaimidae he proposed the subfamilies Nygolaiminae and Longidorinae. In 1935, Thorne added the families Leptonchidae and Diphtherophoridae to Dorylaimoidea.

The era of modern taxonomy of dorylaims began with the publication of the monographs by Thorne & Swanger (1936) and Thorne (1939). In the later monograph Thorne grouped the dorylaims under five families, viz., Dorylaimidae, Leptonchidae, Diphtherophoridae, Alaimidae and a new family Belondiridae and also described and illustrated numerous genera and species. Pearse (1942) gave full ordinal rank to Dorylaimoidea. Andrássy (1959, '60) split the genus Dorylaimus into nine genera. Clark (1961) while classifying Enoplida proposed a new suborder Alaimina, raised Diphtherophoridae to the rank of superfamily and added several families and subfamilies under Dorylaimoidea. Cobb (1963) revised the classification of the order Dorylaimida and included two subordars, Dorylaimina and Alaimina under it. He considered only two superfamilies, Dorylaimoidea and Mononchoidea in Dorylaimina. Jairajpuri (1964) revised the classification of Dorylaimoidea while Thorne (1964) and De Coninck (1965) raised Belondiridae and Nygolaimidae respectively to superfamilial ranks. Heyns (1965) established the family Aporcelaimidae under Dorylaimoidea and provided a revision of the group. Thorne (1967) raised Actinolaimidae to

the rank of a superfamily and included six families in it. Siddiqi (1968) accepted the superfamily Belondiroidea and recognised eight families under it. Heyns (1968) published a very useful monograph on the families Nygolaimidae and Nygolaimellidae. Siddiqi (1969) included 17 families under Dorylaimoidea, nine of which were proposed as new along with six new subfamilies and three new genera. Andrassy (1969) established Prodorylaimidae, and created three new subfamilies under Dorylaimidae, viz., Mesodorylaiminae, Laimydorinae and Afrodorylaiminae and described five new genera. The mononchs were removed from Dorylaimida and grouped under a separate order Mononchida by Jairajpuri (1969). Coomans & Loof (1970) raised Diphtherophoroidea to the rank of a suborder. Ferris (1971) considered Dorylaimoidea, Actinolaimoidea, Belondiroidea, Diphtherophoroidea and a new superfamily Leptonchoidea as constituting the Order Dorylaimida. Coseco et al., (1976-'76) placed five families in Leptonchoidea, revised various genera and added four new ones, viz., Mayliella, Loncharionema, Carthus and Timmus. Khan & Ahmad (1975) raised the family Longidoridae to superfamilial rank, while Jairajpuri et al., (1976) proposed Campydoroidea for Campydora Cobb, 1920. Andrassy (1976) included the suborders, Dorylaimina, Diphtherophorina, Hermithina and Mononchina under Dorylaimida. He (l.c.) considered the superfamilies, Dorylaimoidea, Actinolaimoidea, Belondiroidea, Encholaimoidea, Leptonchoidea

and Nygolaimoidea under Dorylaimina and only one superfamily Diphtherophoroidea under Diphtherophorina. Maggenti (1976) included only two suborders, Dorylaimina and Alaimina under Dorylaimida. Khan et al., (1978) while revising the superfamily Longidoroidea added a new family Xiphidoridae, a new subfamily Paralongidorinae and two new genera Siddiqia and Longidoroides. Ahmad & Jairajpuri (1979) raised Nygolaimoidea to subordinal rank. Jairajpuri & Ahmad (1980) revised the classification of Belondiroidea and recognised only Belondiridae, Dorylaimellidae and Swangeriidae under it. They also divided the genus Dorylaimellus into nine subgenera. Baqri & Jana(1980) revised Thornenematidae and proposed the subfamily Medalinematinae and the genera Jairajpuria and Medalinema.

The taxonomic work on dorylaim nematodes in India started in 1959 when Dr. Mohammad Rafiq Siddiqi of this Department published a paper on Xiphinema spp., in which he described three new (X. indicum, X. citri and X. basiri) and two known species (X. americanum and X. brevicaudatum). Later, in 1960 he described two new species of Trichodorus Cobb, 1913. Siddiqi et al., (1963) proposed a new genus Paralongidorus, while Jairajpuri & A. H. Siddiqi (1963) recorded Tylencholaimellus and Prolertonchus for the first time from India. In 1964, Jairajpuri & A. H. Siddiqi erected the genus Nordia. E. Khan (1964) described a similar genus Enchodorella.

Jairajpuri (1964-'68) and Siddiqi (1964-'68) and their co-workers added several genera, viz., Basirotylenchus, Morolla, Xenocriconemella, Ludaimenus, Scutenbrinkella, Paurinema, Leptonema, Ludaiella, Xenonchium, Calorhinema, Trichonchium, Xenonchium etc., and also reported a large number of new and known species from this country. Husain & Khan (1965-'68) described some species of Dichtherenchus, Dorylaimoides, Dilencholaimellus, Dorylaimellus etc., and a new genus Thornedia. Bagri & Jairajpuri (1967-'77) erected the genus Killinema and Morasia and recorded several new and known species of dorylaims. Khera (1970) revised the classification of Leptonchoidea and proposed Bertschneidernania, a new genus under Leptonchidae. Suryawanshi (1972) added five new species to Belondira along with a new genus Ibrahemema. Ali et al., (1973) and Ali & Prabha (1979) described the genera Scutenbrikia and Indodorylaimus respectively. Ahmad & Jairajpuri (1978-'79) erected the genera Athernema and Psychelondira. Jairajpuri & Ahmad (1979) proposed Paracrydirus and a year later provided a revised classification of Belondiroidea. Jairajpuri & Dhanachand (1979) erected a new genus, Thallenonchium and raised the subgenera Lectylurenonchium and Enantenonchium to full generic ranks. Recently Dhanachand & Jairajpuri (1980) recorded the genera Mindenus and Mylonchus from India. From the account given above it becomes evident that quite a significant

work has been done on the dorylaim nematodes from India, and during a span of 22 years, over 30 new genera, 150 new species and a large number of already known species have been reported.

The present work is restricted mainly to the suborder Dorylaimina and only a single species of the suborder Nygolaimina, belonging to the rare and interesting genus Nygolaimellus has been included. The descriptions of only those species has been provided which are either new to science or new records from India or for which males are reported for the first time. In all, 54 species have been reported under 4 superfamilies, 13 families and 18 subfamilies. These belong to two new and thirty known genera. Twentytwo of the species are new to science. A new subfamily Enchodelilinae under Nordiidae has been erected for Enchodelium, Paleksus, Conacuntus and Criverutus. The new genus Opisthodorylaimus, characterised by the presence of mono-opisthodelphic reproductive system, is placed in the subfamily Mesodorylaiminae of the family Dorylaimidae. Another new genus, Neometadorylaimus has been proposed for Metadorylaimus seemani Ali et al., 1971 and has been placed in the subfamily Metadorylaiminae of the family Tylencholaimidae. The new species belong one each to the genera Dorylaimus Dujardin, 1845; Calodorylaimus Andrássy, 1969; Prodorylaimus Andrássy 1959; Criverutus Siddiqi, 1971; Aporcelaimellus Heyns, 1965; Jairajpuria Bagri & Jana, 1980;

Morgaia Bagri & Jairajpuri, 1969; Calolaimus Timm, 1964; Xirhinemella Loos, 1950; Mycolaimellus Loos, 1945; two each to the genera Labronema Thorne, 1939; Dorylaimoides Thorne & Swanger, 1936; Tylencholaimus De Man, 1876; and three each to Axonchium Cobb, 1920 and Opisthodorylaimus n. gen. Males of the following eleven species are being reported for the first time: Amphidorylaimus flagellicauda, Aporcelaimellus amylovorus, Axonchium shamimi, Axonchium vacinatum, Belondira sacca, Cobbonchus papillatus, Chitwoodius seshadrii, Discolaimus tenax, Prepanodorylaimus flexus, P. ramnicki and Thornenema cavalcantii. Diagnoses of the superfamilies, families, subfamilies and genera under which species are reported has been given. A list of species under each genus is also provided. Chitwoodius fuscus Sauer, 1969 and Longidorella morbida (Loof, 1964) Jairajpuri & Hooper, 1969 are transferred to Tylencholaimus and Criconemoides respectively. Mesodorylaimus pararecurvus nom. nov. is proposed for M. recurvus Thorne, 1974 as the name was preoccupied.

MATERIAL AND METHODS

Soil sampling: Soil samples were collected from around the roots of plants, from a depth of about 15-20 cms. Usually many subsamples were taken and then mixed to make a bulk sample. These samples were kept in polythene bags and were brought to the laboratory for further processing.

Processing of soil samples: The samples were processed by sieving and decantation technique. About 500 gms of soil was taken in a bucket filled to about two-thirds of its volume by water. The water was then stirred gently to make a homogeneous mixture. It was left undisturbed for about 10-20 seconds so that the heavy soil particles etc., may settle at the bottom, while the nematodes along with fine soil particles and debris remained suspended in water. The entire suspension was first passed through a coarse sieve which separated roots, leaves and large soil particles. The comparatively homogeneous suspension obtained as above was then passed through a sieve of mesh No.300 (pore size 53 um). The whole process was repeated twice or thrice to obtain maximum recovery of nematodes. The nematodes along with some debris remained on the sieve while fine soil particles passed through water. The entire catch on the sieve was taken into a beaker.

Isolation: The catch obtained as above was poured on a nylon

filter or tissue filter paper, placed on a small coarse sieve. The latter was then kept in a modified Baermann's funnel filled with water touching the bottom of coarse sieve. This was kept undistrubed for about 24 hours. During this period the nematodes passed through the tissue paper and the coarse sieve into the clean water and settled at the bottom of the funnel. A small amount of water containing nematodes was taken in a test tube or cavity block, through the rubber tubing attached to the bottom of the funnel. The residue on the tissue paper was also checked under stereoscopic binocular microscope for inactive forms.

Killing and fixing: After the concentration of the nematodes in the test tube or cavity block, the extra amount of water was removed with the help of a fine dropper. The nematodes were killed by pouring hot (60-70°C) 4% formalin and were stored in the same solution.

Mounting and sealing: Temporary mounts, whenever needed, were made in water or the fixative. For permanent mounts, the nematodes were transferred to a cavity block containing glycerine-alcohol (5 part glycerine + 95 parts 30% alcohol). The cavity block was then kept in a dessiccator at room temperature for slow dehydration. Within two to three weeks the alcohol evaporated leaving nematodes in pure glycerine completely

dehydrated and ready for permanent mounting.

The metallic or glass slides were used for permanent mounts. For this, the nematodes were transferred to a drop of dehydrated glycerine and pieces of glass-wool of suitable thickness were placed and it was then gently covered with a round coverslip. Extra amount of glycerine, if any, was removed with a blotting paper. The slides were sealed either with nail polish or 'putty' (Jairajpuri & Rahmani, 1979).

Measurements and drawings: All the measurements were taken with the help of an ocular micrometer. De Man's (1884) formula for denoting the dimensions was used. Drawings were made with the help of a camera lucida.

In the text um stands for μm.

Type material: The type material has been labelled and deposited with the Zoology Department of Aligarh Muslim University, Aligarh, India.

ORDER DORYLAIMIDA PEARSE, 1942

Diagnosis: Cuticle smooth, finely or coarsely striated. Labial papillae arranged in two circlets; 6 in the inner and 10 in outer circlet. Stoma simple or sclerotised, which may lead into a tubular or eversible pharynx. The pharynx may possess denticles. Amphids cyathiform, stirrup-shaped or pouch-like with pore or slit-like apertures. Stoma provided with an axial odontostyle or mural tooth, the latter may be located on the subdorsal or subventral wall of pharynx. Odontostyle varies greatly in shape and size. Guiding ring single or double. Odontophore rod-like or with small knobs or broad flanges at its base. Oesophagus in two parts, an anterior slender portion and a basal expanded portion; the latter may be cylindrical or small pyriform bulb, often with a triquetrous or valvular chamber. Nerve ring surrounding anterior slender part of oesophagus. Excretory pore and excretory duct usually absent (except in Campydora). Oesophageal gland nuclei usually five, rarely three, present in the basal expanded part of oesophagus. The dorsal gland nucleus always larger than the subventrals. Cardia or cardiac glands present at the junction of oesophagus and intestine. Intestine oligocytous or polycytous. Female reproductive system monodelphic (mono-prodelphic or mono-opisthodelphic) or amphidelphic. Vulva transverse or longitudinal or a simple pore. Vagina with or without sclerotisation. Males possess a pair of opposed testes.

Spicules paired; gubernaculum and lateral guiding pieces present or absent. Ventromedian supplements few to numerous, either spaced or contiguous. Prerectum present (except in Campydora). Caudal glands absent. Tail shapes and sizes variable, often dissimilar in sexes.

Type suborder: Dorylaimina Pearse, 1936

Other suborders: Nygolaimina Ahmad & Jairajpuri, 1979

Diphtherophorina Coomans & Loof, 1970

SUBORDER DORYLAIMINA PEARSE, 1936

Diagnosis: Stoma simple or sclerotised. Cuticularised pieces may be present around oral aperture. Amphids cup- or stirrup-shaped with slit-like apertures. Odontostyle axial, solid to rod-like, with wide lumen and aperture. Guiding ring single or double. Odontophore rod-like or arcuate; may possess knobs or flanges at its base. Oesophagus consists of anterior slender part and a posterior basal expended part which may be cylindroid occupying about one-third to half of total oesophageal length, or a pyriform basal bulb, often with a triquetrous or valvular chamber. The latter may be enclosed in a sheath of spiral or straight muscle bundles. Nerve ring surrounding anterior slender part of oesophagus. Oesophageal gland nuclei usually five, rarely three. Cardia round to elongate-conoid. Female

reproductive system monodelphic (mono-prodelphic or mono-opisthodelphic) or amphidelphic. Vulva transverse, or longitudinal or a simple pore. Vagina with or without sclerotisation. Males possess a pair of opposed testes. Spicules paired, gubernaculum and lateral guiding pieces present or absent. Ventromedian supplements few to numerous, either spaced or contiguous. Prerectum short to long. Tail shapes and sizes variable often dissimilar in sexes.

Type superfamily : Dorylaimoidea De Man, 1876 (Thorne, 1934)

Other superfamilies: Actinolaimoidea Thorne, 1939 (Thorne, 1967)
Belondiroidea Thorne, 1939 (Thorne, 1964)
Leptonchoidea Thorne, 1935 (Ferris, 1971)
Longidoroidea Thorne, 1935 (Khan & Ahmad, 1975)

SUPERFAMILY DORYLAIMOIDEA DE MAN, 1876 (THORNE, 1934)

Diagnosis: Cuticle smooth with fine or coarse striations. Lip region continuous or set off. Stoma small, simple or sclerotised. Cuticularised plates or cephalic setae may be present around oral aperture. Amphids cup- or stirrup-shaped with slit-like apertures. Odontostyle usually rod-like with fine or broad apertures and lumen. Odontophore rod-like; rarely with knobs or flanges at its base. Guiding ring single

or 'double. Oesophagus consists of anterior slender part and a posterior expanded portion; the latter occupying about one-third to two-thirds of oesophageal length, usually with five gland nuclei. Nerve ring encircles anterior slender part of oesophagus. Cardia rounded to elongate-conoid, with or without disc. Female reproductive system mono-opisthodelphic or amphidelphic. Vulva transverse, longitudinal or pore-like. Males with paired testes, arcuate spicules; gubernaculum absent; lateral guiding pieces present. Ventromedian supplements few to numerous, spaced or contiguous. Prorectum distinct. Tails similar or dissimilar in sexes.

Type family: Dorylaimidae De Man, 1876

Other families: Porcelaimidae Heyns, 1965

Chrysonematidae Siddiqi, 1969

Cratonematidae Siddiqi, 1969

Discolaimidae Siddiqi, 1969

Mirenematidae Siddiqi, 1969

Nordiidae Jairajpuri & A.H.Siddiqi, 1964 (Siddiqi, 1969)

Prodorylaimidae Andrássy, 1969

Qudsianematidae Jairajpuri, 1965 (Siddiqi, 1969)

Thornenematidae Siddiqi, 1969

Thornidae De Coninck, 1965 (Siddiqi, 1969).

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*The author has just now received a paper by Mulvey & Anderson (1979) in which a new genus Arctidorylaimus and a new family Arctidorylaimidae have been proposed. This could not be included in this thesis. This new family has affinities with Dorylaiminae, Dorylaimidae in the possession of longitudinal lines on the cuticle, as well as Qudsianematidae in the shape of tail.

KEY TO THE FAMILIES OF DORYLAIMIDEA

1. Odontostyle narrow, attenuated with small aperture 2
   Odontostyle usually broad with wide lumen 6

2. Tails showing sexual dimorphism ..... Nirenematidae
   Tails not showing sexual dimorphism 3

3. Odontostyle long, about two lip-widths ..... Nordiidae
   Odontostyle short, about one lip-width or less 4

4. Tails of both sexes hemispherical, males with one or two supplements ..... Thorniidae
   Tails of both sexes conoid, males with numerous supplements 5

5. Cuticle with coarse transverse striations, body pores usually distinct, spicules poorly developed ..... Cratonematidae
   Cuticle with fine transverse striations, body pores indistinct, spicules well developed .....Chrysonematidae

6. Lip region sclerotized ..... Thornenematidae
   Lip regions not sclerotized 7

7. Body usually robust, tail hemispherical to conoid 8
   Body comparatively slender, tail long filiform 10

8. Cuticle thick with criss-cross lines or punctations, odontostyle wide with broad aperture, about half its length .. .. Aporcelaimidae

Cuticle thin without criss-cross lines or punctations, odontostyle comparatively slender, its aperture about one-third of its length 9

9. Lip region discoidal, well developed hypodermal glands present ..... Discolaimidae
Lip region not forming disc, hypodermal glands usually absent or poorly developed ..... Qudsianematidae

10. Tails showing sexual dimorphism ..... Dorylaimidae
Tails not showing sexual dimorphism ..... Prodorylaimidae

FAMILY DORYLAIMIDAE DE MAN, 1876

Diagnosis (amended): Cuticle finely or coarsely striated with or without longitudinal ridges. Lip region continuous or set off; lips amalgamated, often with raised papillae. Amphids stirrup-shaped with slit-like apertures. Odontostyle dorylaimoid with wide lumen and aperture. Guiding ring single or double. Odontophore rod-like. Oesophagus highly muscular, dorylaimoid. Basal expanded portion of oesophagus occupying about half of oesophageal length. The opening of dorsal oesophageal gland at anterior end of oesophageal enlargement, while the openings of two anterior subventrals are at some

distance from each other near its middle, and the openings of two posterior subventrals are close together at some distance from base of oesophagus. Cardia short to elongate-conoid. Intestine polycytous. Female reproductive system mono-opisthodelphic or amphidelphic. Vulva transverse or longitudinal or pore-like (circular). Vagina thick-walled usually sclerotised distally. Males wit long arcuate spicules and lateral guiding pieces. Ventromedian supplements few to numerous always located above the spicular range, contiguous or spaced, rarely grouped (fascicles). Tail elongate-conoid to long filiform in females and short-conoid in males.

Type subfamily : Dorylaiminae De Man, 1876

Other subfamilies: Afrodorylaiminae Andrássy, 1969
Laimydorinae Andrássy, 1969
Mesodorylaiminae Andrássy, 1969

SUBFAMILY DORYLAIMINAE DE MAN, 1876

Diagnosis: Cuticle thick, regular with wing-like longitudinal ridges over the entire body except at the extremities. Lip region continuous with body contour, lips amalgamated, often with raised papillae. Odontostyle long, dorylaimoid, with wide lumen and aperture. Guiding ring 'double'. Odontophore rod-

like. Basal expanded portion of oesophagus occupying more than half of oesophageal length. Cardia elongate-conoid. Female reproductive system amphidelphic. Vulva transverse or pore-like. Prerectum in males very long, beginning well in front of supplements, or short, within the range of supplements. Ventromedian supplements numerous, contiguous or in groups (fascicles). Female tail long filiform, male tail short, conoid.

Type genus : Dorylaimus Dujardin, 1845

Other genera: Ischiodorylaimus Andrássy, 1969
Paradorylaimus Andrássy, 1969

SUBFAMILY LAIMYDORINAE ANDRÁSSY, 1969

Diagnosis: Cuticle smooth, subcuticle often with coarse transverse striation. Lip region continuous with body contour, lips amalgamated. Odontostyle dorylaimoid, with wide lumen and aperture. Guiding ring 'double', sclerotised. Odontophore rod-like. Basal expanded portion of oesophagus occupying about half of total oesophageal length. Cardia elongate-conoid. Female reproductive system amphidelphic. Vulva longitudinal. Prerectum in males very long, beginning well in front of supplements. Ventromedian supplements numerous, contiguous. Tail long filiform in females and short, conoid in males.

Type genus: Leimydorus Siddiqi, 1969

Other genus: Idiodorylaimus Andrássy, 1969

SUBFAMILY MESODORYLAIMINAE ANDRÁSSY, 1969

Diagnosis: (emended) Cuticle finely transversely striated. Lip region continuous or set off, lips amalgamated. Odontostyle dorylaimoid with wide lumen and aperture. Guiding ring single or indistinctly 'double'. Odontophore rod-like. Basal expanded portion of oesophagus about half of oesophageal length. Cardia short to elongate-conoid. Female reproductive system mono-opisthodelphic or amphidelphic. Vulva transverse or longitudinal or pore-like (circular). Prorectum in males relatively short, beginning within the range of supplements or at a point just in front of supplementary series. Ventromedian supplements few to numerous, contiguous, spaced or in two groups. Tail long filiform in females, and short, conoid with rounded terminus in males.

Type genus : Mesodorylaimus Andrássy, 1959

Other genera: Calodorylaimus Andrássy, 1969
Drepanodorylaimus Jairajpuri, 1966
Minidorylaimus Andrássy, 1972
Opisthodorylaimus n. gen.

SUBFAMILY AFRODORYLAIMINAE ANDRÁSSY, 1969

Diagnosis: Cuticle smooth, or finely striated. Lip region continuous or offset by a depression. Odontostyle long, dorylaimoid. Guiding ring single. Odontophore rod-like. Basal expanded portion of oesophagus about half of oesophageal length. Cardia elongate-conoid. Female reproductive system amphidelphic. Vulva transverse. Prerectum in males short, beginning within the range of supplements. Ventromedian supplements few, slightly spaced. Tail long filiform in females and short, conoid with pointed tip and distinct caudal papillae in males.

Type and only genus: Afrodorylaimus Andrássy, 1964

KEY TO SUBFAMILIES AND GENERA OF DORYLAIMIDAE

1. Cuticle with longitudinal ridges ..... Dorylaiminae 2
   Cuticle without longitudinal ridges 4
2. Supplements in two groups or fascicles .....
   ..... Ischiodorylaimus
   Supplements not in groups 3
3. Prerectum in males very long, beginning well in front of supplements, supplements numerous (25 - 55) .....
   ..... Dorylaimus

Prerectum in males relatively short, beginning within the range of supplements, supplements 10-12 .... Paradorylaimus

4. Guiding ring sclerotized, 'double'; prerectum in males beginning well in front of supplements ....Laimydorinae 5
Guiding ring not sclerotized, single or weak 'double', prerectum in males short usually beginning within the range of supplements 6

5. Subcuticle with coarse striation or annulation .... Idiodorylaimus
Subcuticle without coarse striations or annulation .... Laimydorus

6. Male tail with rounded terminus ..... Mesodorylaiminae 7
Male tail with pointed terminus .... Afrodorylaiminae. Afrodorylaimus

7. Female reproductive system mono-opisthodelphic .... Opisthodorylaimus
Female reproductive system amphidelphic 8

8. Odontostyle asymmetrical, two parts of oesophagus not clearly separated ..... Prepanodorylaimus
Odontostyle rod-like, two parts of oesophagus clearly demarcated 9

9. Odontophore flanged ..... Minidorylaimus

Odontophore simple rod-like 10

10. Ventromedian supplements well developed, contiguous or spaced ..... Mesodorylaimus

Ventromedian supplements poorly developed, in two groups.. ..... Calodorylaimus

GENUS *LORYLAIMUS* DUJARDIN, 1845

The genus *Lorylaimus* was proposed by Dujardin, 1845 with *Lorylaimus stagnalis* as its type species. Numerous species were added to this genus by various workers, e.g., Bastian (1865), De Man (1880), Orley (1880), Daday (1905), Cobb (1914), De Coninck (1935), Schneider (1937), Thorne & Swanger (1936), Thorne (1939), Andrássy (1958), etc. Andrássy (1959) subdivided *Lorylaimus* into a number of genera and included only large sized species with sexual dimorphism in tail in it. Goodey (1963) amended the diagnosis of *Lorylaimus* and included only the species with longitudinal ridges on the cuticle in this genus. Andrássy (1969) further subdivided the genus into three genera and restricted only those species which have longitudinal ridges and numerous contiguous supplements to *Lorylaimus*. Andrássy (1970), Bagri & Coomans (1973), Usunov (1974) have added species to this genus during the last decade.

In the present work specimens of Lorylaimus were found in the soil samples collected from different localities in India. Upon detailed study they were found to represent the type species, *Lorylaimus stagnalis* and a new species, both of which are described hereunder.

Diagnosis: Large sized nematodes, 3-5 mm long. Cuticle thick, regular with wing-like longitudinal ridges over the entire body, except the extremities. Lateral body pores distinct, usually numerous; series of ventral and dorsal body pores may also be present. Lip region continuous with the body, lips amalgamated, often with raised papillae. Amphids stirrup-shaped with slit-like apertures. Odontostyle massive with wide lumen and aperture. Guiding ring 'double'. Odontophore rod-like. Oesophagus very muscular enlarging near its middle. Cardia elongate-conoid. Female reproductive system amphidelphic. Vulva transverse or pore-like. Prerectum in males very long, beginning well in front of supplements. Spicules arcuate. Lateral guiding pieces present. Ventromedian supplements numerous (25-55), contiguous. Tail long filiform in females and short, conoid with rounded terminus in males.

Type species: Xiphinema americanum Cobb, 1913

Other species: X. adenohystera Lamberti & Bleve-Zacheo, 1979

X. afghanicum Andrássy, 1960

X. algeriense Loof & Luc, 1972

X. americanum Cobb, 1913

X. arcuatum Lordello, 1955

X. basiri Khan, Saha & Maqbool, 1974

X. bricolense Coomans & Loof, 1970

X. brevicolle Lordello & Da Costa, 1961

X. californicum Lamberti & Bleve-Zacheo, 1979

X. chambersi Tarjan, 1964

X. coxi Tarjan, 1964

X. cruciani Lamberti & Bleve-Zacheo, 1979

X. dendrohystera Lamberti & Bleve-Zacheo, 1979

X. diffusum Lordello & Da Costa, 1961

X. elongatum Schuurmans Stekhoven & Teunissen, 1938

X. georgianum Tarjan, 1964

X. hispanum Lamberti & Bleve-Zacheo, 1979

X. index Thorne & Swanger, 1936

X. insigne Loos, 1949

X. italiae Meyl, 1953

X. krugi Lordello & Da Costa, 1961

X. longicaudatum Lordello & Da Costa, 1961

X. longicollum Lordello & Da Costa, 1961

X. longidorum Siddiqi, 1964

X. longistylum Lordello & Da Costa, 1961

X. macrostylum Lordello & Da Costa, 1961

X. mediterraneum Lamberti & Bleve-Zacheo, 1979

X. mexicanum Tarjan, 1961

X. microconus Tarjan, 1964

X. neoamericanum Lordello & Da Costa, 1961

X. obliquum Lordello & Da Costa, 1961

X. occiduum Lamberti & Bleve-Zacheo, 1979

X. pachtaicum (Tulaganov, 1938) Jacob, 1967

X. paraelongatum Lordello & Da Costa, 1961

X. parvum Tarjan, 1964

X. pinguedo Tarjan, 1964

X. pyrenaicum Lamberti & Bleve-Zacheo, 1979

X. radicicolum Lordello & Da Costa, 1961

X. rivesi Dalmasso, 1969

X. rotundum Lordello & Da Costa, 1961

X. setariae Khan, Saha & Maqbool, 1974

X. simile Lordello & Da Costa, 1961

X. solecistum Tarjan, 1964

X. surinamense Loof & Luc, 1972

X. tarjani Lamberti & Bleve-Zacheo, 1979

X. tenuicaudatum Lordello & Da Costa, 1961

X. tenuicolle Lordello & Da Costa, 1961

X. tenuidens Lordello & Da Costa, 1961

X. tenuistylum Lordello & Da Costa, 1961

X. vallesium Lamberti & Bleve-Zacheo, 1979

X. vuittenezi Luc & Dalmasso, 1962

D. macrorectus Altherr, 1963

D. montanus (Stefanski, 1923) Thorne & Swenger, 1936

D. multilaesus Khera, 1970

D. ohridanicola Ebsanov, 1974

D. oschyg Andrássy, 1970

D. paradoxus Eliava, 1967

D. ruhenstrati De Coninck, 1935

D. siddiqii n. sp.

D. steinbrenni Baqri & Coomans, 1973

D. stenus Andrássy, 1970

D. stephani Andrássy, 1969

D. tenidus Andrássy, 1959

D. thornei Andrássy, 1969

D. unicus Andrássy, 1970

LORYLAIMUS STAGNALIS DUJARDIN, 1845

Dimensions:

Females (5): L = 3.26-3.99 mm; a = 28-36; b = 4.4-5.5; c = 16-21; V = 39-46; G_1 = 16-17; G_2 = 15-16; odontostyle = 46-47 um; odontophore = 44-46 um; oesophagus = 636-811 um; prerectum = 249-349 um; rectum = 65-73 um; tail = 171-249 um; ABD = 54-59 um.

Male: L = 3.27 mm; a = 29; b = 4.4; c = 88; odontostyle = 47 um; odontophore = 46 um; oesophagus = 741 um; spicules = 95 um; lateral guiding pieces = 15 um; ventromedian supplements = 48; prerectum = 391 um; tail = 37 um; ABD = 59 um.

Habitat and locality: Soil around roots of paddy, Oryza sativa L., from Muttapullam, district Madras, Tamil Nadu.

Remarks: Dorylaimus stagnalis is reported here for the first time from India. The present specimens conform well with those described by Dujardin (1845), Thorne & Swanger (1936) and Andrássy (1969), except that these have a slightly shorter body and more ventromedian supplements (L = 4.8 mm; ventromedian supplements = 34-45 in type specimens).

DORYLAIMUS SIDDIQUI N. SP.
(Fig. 1)

Dimensions:

Paratype female : L = 2.17 mm; a = 38; b = 4.3; c = 14; c' = 5.5; V = 49; G_1 = 14; G_2 = 15; odontostyle = 37 um; odontophore = 31 um; oesophagus = 530 um; prerectum = 149 um; rectum = 42 um; tail = 150 um; ABD = 29 um.

Holotype female: L = 2.23 mm; a = 35; b = 4.5; c = 14; c' = 5.3; V = 47; G_1 = 15; G_2 = 20; odontostyle = 37 um; odontophore = 29 um; oesophagus = 488 um; prerectum = 120 um; rectum = 30 um; tail = 155 um; ABD = 29 um.

Paratype males (3): L = 1.5[illegible]-1.86 mm; a = 28-35; b = 3.9-4.0; c = 53-64; T = 53-55; odontostyle = 35-36 um;

odontophore = 27-30 um; oesophagus = 391-470 um; spicules = 50-51 um; ventromedian supplements = 31-34; preanctum = 188-213 um; tail = 29-30 um; ABD = 34-35 um.

Description:

Female: Body ventrally curved upon fixation, tapering towards both extremities. Cuticle finely striated, marked with 34 longitudinal lines in the middle. Lateral chords about one-fourth of body-width at midbody.

Lip region narrower than the adjoining body, slightly marked off by a depression, 11-12 um or about one-fifth of body-width at base of oesophagus. Lips amalgamated, labial papillae not projecting above the contour of lip region. Amphids stirrup-shaped, their apertures 5-6 um or about half of corresponding body-width wide. Odontostyle about three lip-widths long, its aperture 7-8 um or about one-fifth of the odontostyle length. Guiding ring 'double', at 20-23 um or 1.6-1.9 lip-widths from anterior end. Odontophore simple rod-like, 0.7-0.8 times the odontostyle length. Nerve ring at 156-162 um from anterior end of body. Basal expanded portion of oesophagus occupying about 44-50% of total oesophageal length. Cardia elongate-conoid, 29-30 um or about half of the corresponding body-width long. Location of oesophageal gland nuclei and their orifices as in Table - I.

Reproductive system amphidelphic. Vulva pore-like, vagina 23-24 um or less than half of corresponding body-width long. Distinct sphincter present at oviduct-uterus junction. Prerectum about 4-5 anal body-widths long. Rectum about one anal body-width long. Tail elongate, gradually tapering, about 5-6 anal body-widths long, with one or two caudal pores on each side.

Male: Supplements an adanal pair and a contiguous series of 31-34 ventromedians. Spicules about 1.4 anal body-width long, with a simple median piece. Lateral guiding pieces more or less rod-shape. Prerectum 6-7 anal body-widths long, extending well beyond the range of supplements. Tail convex-conoid with rounded terminus, less than one anal body-width long, with one or two caudal pores on each side.

Type habitat and locality: Soil around roots of paddy, Oryza sativa L., from Bhubaneswar, Orissa state.

Type specimens: Collected in March 1979; holotype female and one paratype male on slide Dorylaimus siddiqii n. sp./1; other paratypes on slides Dorylaimus siddiqii n. sp./2-4.

Differential diagnosis: Dorylaimus siddiqii n. sp. comes close to D. thornei Andrássy, 1969 but differs from it in having a shorter and narrower body, differently shaped lip-region, smaller and narrower odontostyle, in the absence of vulval

papillae, in the shape of vulva, and in having a longer prorectum (L = 2.7-2.8 mm; a = 27-28; lip region 22 um wide; odontostyle 40 um long; a pair of vulval papillae on each side of vulva, and prorectum 3 anal body-widths long in D. thornei).

The new species has been named after Dr. M. Rafiq Siddiqi, Principal Nematologist of the Commonwealth Institute of Helminthology, St. Albans, U.K., who has done meritorious work on the nematodes of world including dorylaims.

GENUS *LAIMYDORUS* SIDDIQI, 1969

The genus *Laimydorus* was proposed by Siddiqi (1969) for those species of *Mesodorylaimus* which possess double spear guiding ring, longitudinal vulva, numerous ventromedian supplements and their prerectum extending well beyond the range of supplements. Andrássy (1969) transferred some species of *Mesodorylaimus* and *Dorylaimus* to this genus. Baqri & Coomans (1973) transferred *Dorylaimus parhomaloparilatus* Schuurmans Stekhoven, 1944 to this genus. Thorne (1974) described two new species and further transferred three species of *Mesodorylaimus* under it.

In the present work specimens of *Laimydorus* were found in the soil samples collected from Gandhidham, Gujarat state. Upon detailed study they were found to represent a known species which is also the first report of the genus from India.

Diagnosis: Body usually more than 2 mm long. Cuticle thick with fine striae, lacking ridges or punctations, scattered radial striae may be present. Lateral body-pores distinct, usually numerous. Lip region continuous or offset with body contour, lips amalgamated. Amphids stirrup-shaped with large apertures. Odontostyle massive with wide lumen and aperture. Guiding ring sclerotized 'double'. Odontophore rod-like. Oesophagus very muscular, gradually enlarging near its middle.

Cardia long, dilitate. Female reproductive system amphidelphic. Vulva longitudinal. Prerectum in males extending well beyond the range of supplements. Ventromedian supplements numerous, contiguous. Spicules long, doryiaimoid, with lateral guiding pieces. Tail long filiform in females and short, conoid with rounded terminus in males.

Type species: Dolichodorus prolificus (Thorne & Swanger, 1936) Siddiqi, 1969

Other species:
- D. acris (Thorne, 1939) Andrássy, 1969
- D. acutus (De Man, 1880) Siddiqi, 1969
- D. callosus (Skwarra, 1921) Andrássy, 1969
- D. conurus (Thorne, 1939) Siddiqi, 1969
- D. crassoides (Jagerskiold, 1908) Siddiqi, 1969
- D. crassus (De Man, 1884) Thorne, 1974
- D. cryptonastus (Loof, 1969) Baqri & Coomans, 1973
- D. dadayi (Thorne & Swanger, 1936) Andrássy, 1969
- D. effilatus (Sch.Ste. & Teshisson, 1938) Andrássy, 1969
- D. flavomaculatus (Linstow, 1876) Siddiqi, 1969
- D. gazella Andrássy, 1970
- D. heterocephalus (Deday, 1897) Andrássy, 1969
- D. inopus (Steiner, 1920) Thorne, 1974
- D. hofmaennari (Mamalin Hofmanner & Menzel, 1914) Andrássy, 1969

L. *duttichaui* (Meyl, 1957) Siddiqi, 1969

L. *marinus* (Dujardin, 1845) Siddiqi, 1969

L. *parabeatiani* (Paetzold, 1958) Siddiqi, 1969

L. *parahomalopapillatus* (Sch. Stekhoven, 1944) Bagri & Coomans, 1973

L. *parainnae* Thorne, 1974

L. *proximus* (Thorne & Swanger, 1936) Siddiqi, 1969

L. *pseudobtecnalis* (Micoletzky, 1927) Siddiqi, 1969

L. *reversus* Thorne, 1974

L. *serrentinus* (Thorne & Swanger, 1936) Siddiqi, 1969

L. *stenopygus* (Andrássy, 1968) Siddiqi, 1969

L. *tenuicaudatus* (Bastian, 1865) Siddiqi, 1969

L. *thornei* Andrássy, 1969

L. *unipapillatus* (Bütschli, 1905) Andrássy, 1969

L. *vivesmictus* (Andrássy, 1962) Siddiqi, 1969

LAIMYDORUS PSEUDOBTECNALIS (MICOLETZKY, 1927) SIDDIQI, 1969

Dimensions:

Females (5): L = 2.35–2.75 mm; a = 45–47; b = 4.8–5.4; c = 9–10; c' = 9–10; V = 44–48; G_1 = 15–17; G_2 = 15–18; odontostyle = 26–27 um; odontophore = 27–29 um; oesophagus = 481–507 um; prerectum = 128–202 um; rectum = 36–51 um; tail = 259–274 um; ABD = 26–28 um.

Males (2): L = 2.21-2.61 mm; a = 40-46; b = 4.4-4.7; c = 96-98; V = 61-63; odontostyle = 27 um; odontophore = 29 um; oesophagus = 496-518 um; spicules = 49-50 um; ventromedian supplements = 26-27; proractum = 390-412 um; tail = 23-24 um; ABD = 30-31 um.

Habitat and locality: Soil around roots of water weeds from Kandla port, Gandhidham, Gujarat state.

Remarks: The Indian specimens are quite similar to the type specimens except that these have a slightly shorter body and longer tail (L = 3.7 mm; c = 13 in type specimens).

GENUS *MESODORYLAIMUS* ANDRÁSSY, 1959

The genus *Mesodorylaimus* was proposed by Andrássy(1959) for those species of *Dorylaimus* which possess moderate sized body, well developed odontostyle, single or 'double' guiding ring, amphidelphic reproductive system, transverse or longitudinal or pore-like vulva, and sexual dimorphism in tail. Coomey (1963) amended the diagnoses of *Dorylaimus* and *Mesodorylaimus* and transferred 36 species from the former to the latter. Andrássy (1963-'70), Heyns (1963), Loof (1964-'75), Altherr (1965), Lordello (1965), Baqri & Coomans (1973), Mullini (1973); Baqqan & Heyns (1974), Thorne (1974), added a number of species to this genus which comprises over 90 species at present.

During the present work many samples yielded specimens of *Mesodorylaimus*. These specimens represent four known species It is also the first report of the genus from India.

Diagnosis: Body length usually 1-2 mm. Cuticle thick with fine transverse striae. Body pores indistinct. Lip region continuous or set off by a depression or constriction. Amphids stirrup-shaped with slit-like apertures. Odontostyle usually slightly longer than one lip-width, its aperture occupying about half or less of its length. Guiding ring single or weakly 'double'. Odontophore rod-like. Oesophagus muscular

gradually to abruptly enlarging near middle. Cardia short, conoid or digitate. Female reproductive system amphidelphic. Vulva transverse or longitudinal. Prerectum in males short, usually within the range of supplements. Spicules arcuate, dorylaimoid, with lateral guiding pieces. Ventromedian supplements adjacent or spaced. Tail elongate-conoid to long filiform in females and short, conoid with rounded terminus in males.

Type species: Longedorylaimus macrocyticus (Kreis, 1930) Andrássy, 1959

Other species: M. aberrans Loof, 1969

M. adalberti Andrássy, 1963

M. adjariensis Tskitishvili, 1969

M. aegyptiacus Andrássy, 1958

M. aestuarii (Timm, 1952) Andrássy, 1958

M. alpestris (Thorne, 1939) Andrássy, 1959

M. arcuatus Andrássy, 1964

M. argentinus Altherr, 1963

M. arvensis (Cobb in Thorne & Swanger, 1936) Andrássy, 1959

M. attenuatus (De Man, 1880) Andrássy, 1959

M. bainai Basson & Heyns, 1974

M. bastiani (Butschli, 1873) Andrássy, 1959

M. birci (Daday, 1899) Andrássy, 1959

M. **brevidens** Thorne, 1974

M. **cardiacus** Thorne, 1974

M. **clavicaudatus** (Thorne & Swanger, 1936) Andrássy, 1959

M. **delicatus** Lordello, 1965

M. **derni** Loof, 1969

M. **dauberti** (Andrassy, 1958) Goodey, 1963

M. **dreyeri** (V. d. Linde, 1938) Goodey, 1963

M. **erdelyii** Andrassy, 1965

M. **exilis** (Cobb, 1893) Andrássy, 1959

M. **fasticatus** (Thorne & Swanger, 1936) Andrassy, 1959

M. **fecundus** (Daday, 1914) Goodey, 1963

M. **filicaudatus** (Daday, 1905) Goodey, 1963

M. **flagellatus** (Williams, 1959) Loof, 1975

M. **gaussi** (Steiner, 1916) Goodey, 1963

M. **ghanae** Andrássy, 1965

M. **globigena** Loof, 1964

M. **guarani** Andrássy, 1963

M. **imperator** Loof, 1975

M. **importus** Basson & Heyns, 1974

M. **intervallis** (Thorne & Swanger, 1936) Andrássy, 1959

M. **johanni** Basson & Heyns, 1974

M. **karandeensis** Baqri & Coomans, 1973

M. **kalinii** (Loo, 1961) Andrássy, 1969

M. kenyni Basson & Heyns, 1974

M. krishnarasi (Moorthy, 1938) Coodey, 1963

M. liasus Thorne, 1974

M. litoralis Looŝ, 1969

M. lordelloi (Meyl, 1957) Andrássy, 1959

M. lourdesae (Lordello, 1955) Andrássy, 1959

M. luci Brzeski & Szczygiel, 1961

M. macrophalus Thorne, 1974

M. margaritus Basson & Heyns, 1974

M. meridianus Andrássy, 1963

M. mexicanus Zullini, 1973

M. minus Geraert, 1962

M. nigritulus (W. Schneider, 1937) Andrássy, 1959

M. nudus (Thorne, 1939) Andrássy, 1959

M. obscurus Thorne, 1974

M. orientalis Andrássy, 1970

M. pastoldi Altherr, 1965

M. paraguayensis (Kreis, 1932) Andrássy, 1959

M. paralitoralis Basson & Heyns, 1974

M. pararecurvus nom. nov.

(= M. recurvus Thorne, 1974)

M. parasubtilis (Meyl, 1954) Andrássy, 1959

M. pseudbuchneri (Meyl, 1956) Andrássy, 1959

M. pinai Lordello, 1965

M. polyblastus (Bastian, 1865) Cooday, 1963

M. potus Heyns, 1963

M. praectus Thorne, 1974

M. profundis (Cobb, 1904) Cooday, 1963

M. pseudocilis (Altherr, 1952) Andrássy, 1959

M. pseudobastiani Loof, 1969

M. pseudosubtilis Basson & Heyns, 1974

M. pusillus Andrássy, 1961

M. pusillus (Cobb, 1893) Andrássy, 1959

M. recurvus Andrássy, 1964

M. rhenanus Altherr, 1965

M. rotundolabiatus Basson & Heyns, 1974

M. sabaudianus Juget, 1969

M. sanctus Basson & Heyns, 1974

M. signatus Loof, 1975

M. simplex Thorne, 1974

M. spongelli (De Man, 1912) Andrássy, 1959

M. subtiliformis (Andrassy, 1959) Andrássy,1959

M. subtilis (Thorne & Swanger, 1936)
Andrássy, 1959

M. subtiloides (Paetzold, 1958) Andrássy,1959

M. subulatus (Cobb in Thorne & Swanger, 1936)
Andrássy, 1959

M. svaltus (Heyl, 1957) Andrássy, 1959

M. szumyczhii Andrássy, 1968

M. tenellus (Thorne & Swanger, 1936)
Andrássy, 1959

M. thornei (Cobb in Hoeppli, 1926)
Goodey, 1963

M. tholocercus Andrássy, 1968

M. thornei-mencarae Andrássy, 1968

M. transkeiensis Basson & Heyns, 1974

M. unitatus Basson & Heyns, 1974

M. vulvacapillatus Bagaluriya & Eliava, 1966

M. zeylandicus (Loos, 1945) Goodey, 1963

MESOCRICONEMA GIOBICERE LOOF, 1964

Dimensions:

Females (6): L = 0.93-1.12 mm; a = 31-33; b = 4.3-5.8; c = 10-12; c' = 6-7; V = 45-47; G_1 = 14-18; G_2 = 15-16; odontostyle = 10-11 um; odontophore = 14-15 um; oesophagus = 192-213 um; prerectum = 65-80 um; rectum = 23-25 um; tail = 91-110 um; ABD = 15-18 um.

Males (2): L = 0.99-1.09 mm; a = 33-35; b = 4.8-5.1; c = 55; T = 62-66; odontostyle = 10-11 um; odontophore = 15 um; oesophagus = 206-212 um; spicules = 29-30 um; lateral guiding pieces = 9-10 um; ventromedian supplements = 15-19; prerectum = 135-142 um; tail = 18-20 um; ABD = 18-20 um.

Habitat and locality: Soil around roots of paddy, Oryza sativa L., from Aslali, district Ahmadabad, Gujarat state.

Remarks: Loof (1964) described Mesodorylaimus globicaula from Venezuela. The present specimens conform well with those described by him except that these have a slightly shorter body, tail and spicules (L = 1.02-1.40 mm; c = 7.5-9.4; spicules = 35-40 um in type specimens).

MESODORYLAIMUS SYNNI BRZESKI & HEYNS, 1974

Dimensions:

Females (5): L = 1.26-1.33 mm; a = 29-34; b = 6.3-6.7; c = 7-9; c' = 6-9; V = 45-46; G_1 = 15-16; G_2 = 15-18; odontostyle = 11-12 um; odontophore = 14-15 um; oesophagus = 192-198 um; prerectum = 56-80 um; rectum = 23-24 um; tail = 138-179 um; ABD = 19-21 um.

Male: L = 1.21 mm; a = 32; b = 6.0; c = 64; T = 58; odontostyle = 12 um; odontophore = 14 um; oesophagus = 202 um; spicules = 36 um; lateral guiding pieces = 8 um; ventromedian supplements = 15; prerectum = 105 um; tail = 19 um; ABD = 23 um.

Habitat and locality: Soil around roots of paddy, Oryza sativa L., from district Gaya, Bihar.

Remarks: Basson & Heyns (1974) described Mesodorylaimus kenyni from South Africa. The Indian specimens are similar to the type specimens except that these have a slightly shorter oesophagus.

MESODORYLAIMUS PSEUDOSUBTILIS BASSON & HEYNS, 1974

Dimensions:

Females (5): L = 1.11-1.13 mm; a=32-33; b = 4.7-4.9; c = 5-6; c' = 12-13; V = 45-46; G_1 = 14-16; G_2 = 10-17; odontostyle = 12-13 um; odontophore = 15-16 um; oesophagus = 231-249 um; prerectum = 50-76 um; rectum = 30-34 um; tail = 167-230 um; ABD = 18-19 um.

Males (2): L = 1.01-1.02 mm; a = 30-31; b = 4.2-4.4; c = 22; T = 53-59; odontostyle = 12-13 um; odontophore = 15-16 um; oesophagus = 231-240 um; spicules = 33-35 um; lateral guiding pieces = 8-9 um; ventromedian supplements = 8-9; prerectum = 69-75 um; tail = 20-23 um; ABD = 22 um.

Habitat and locality: Soil around roots of water weeds from Gopeshwar, district Chamoli, Uttar Pradesh.

Remarks: Mesodorylaimus pseudosubtilis was described by Basson & Heyns (1974) from South Africa. The present specimens are similar but have slightly smaller spicules (spicules = 41 um in type specimens).

MESOCRICONEMA CULTELLUS (COBB, 1893) ANDRÁSSY, 1959

Dimensions:

Chamoli population:

Females (5): L = 0.85-0.95 mm; a = 32-34; b = 4.2-4.4; c = 4-5; c' = 12-15; V = 40-47; G_1 = 9-12; G_2 = 10-13; odontostyle = 11-12 um; odontophore = 14-15 um; oesophagus = 201-213 um; prerectum = 28-30 um; rectum = 18-20 um; tail = 185-237 um; ABD = 15-16 um.

Mussoorie population:

Females (4): L = 0.84-0.94 mm; a = 34-36; b = 4.4-4.5; c = 4; c' = 15-16; V = 44-46; G_1 = 11-15; G_2 = 11-13; odontostyle = 11-12 um; odontophore = 14-15 um; oesophagus = 188-206 um; prerectum = 27-30 um; rectum = 15-16 um; tail = 222-229 um; ABD = 14-15 um.

Habitats and localities: Soil around roots of (i) mosses and grasses from lower Chamoli, district Chamoli, Uttar Pradesh; (ii) ferns and mosses from Mussoorie, district Dehradun, Uttar Pradesh.

Remarks: The present specimens have a slightly longer tail than those described by Cobb (1893).

GENUS *CALODORYLAIMUS* ANDRÁSSY, 1969

Andrássy (1969) proposed the genus *Calodorylaimus* from West Africa based on a single species. During the course of the present work some specimens of this genus were found in the soil samples collected from West Bengal. Upon study it became evident that these specimens are different from the type species in a number of characters and hence represent a new species of this genus. This being also the first record of *Calodorylaimus* from this country.

Diagnosis: Large sized nematodes. Cuticle finely striated. Lip region truncate, offset by depression, wider than adjoining body. Amphids stirrup-shaped, amphidial apertures appearing bilobed. Odontostyle long, its aperture about one-third of its length. Guiding ring single. Odontophore rod-like. Oesophagus muscular gradually enlarging near its middle. Cardia elongate-conoid. Female reproductive system amphidelphic. Vulva transverse, vagina sclerotised distally. Prerectum long in both sexes. Spicules dorylaimoid. Ventromedian supplements in two groups, between these groups free supplements also present. Tail long filiform in females and short, conoid in males, with numerous caudal papillae.

Type species: *Calodorylaimus otto* Andrássy, 1969

Other species: *C. indicus* n. sp.

CALODORYLAIMUS INDICUS N. SP.

(Fig. 2)

Dimensions:

Paratype females (5): L = 2.08-2.14 mm; a = 48-49; b = 4.3-4.7; c = 6-7; c' = 14-16; V = 43-47; G_1 = 14-15; G_2 = 14-16; odontostyle = 24-25 um; odontophore = 28-30 um; oesophagus = 468-472 um; prorectum = 105-118 um; rectum = 34-36 um; tail = 316-339um; ABD = 21-23 um.

Holotype female: L = 2.10 mm; a = 47; b = 4.7; c = 6; c' = 15; V = 43; G_1 = 15; G_2 = 16; odontostyle = 25 um; odontophore = 29 um; oesophagus = 440 um; prorectum = 105 um; rectum = 36 um; tail = 322 um; ABD = 21 um.

Paratype males (2): L = 1.88-2.01 mm; a = 44-49; b = 4.2-4.6; c = 111-116; T = 54-56; odontostyle = 24-25 um; odontophore = 28-29 um; oesophagus = 429-444 um; spicules = 40-41 um; lateral guiding piece = 8-9 um; ventromedian supplements = 20-21; prorectum = 202-246 um; rectum = 43-44 um; tail = 16-17 um; ABD = 23-24 um.

Description:

Female: Body slightly ventrally curved upon fixation, tapering towards extremities. Cuticle finely striated. Lateral chords about one-fourth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region truncate, almost continuous with body contour, 10-11 um or about one-fourth of body-width at base of oesophagus. Amphids stirrup-shaped, their apertures 5-6 um or about half of corresponding body-width wide. Odontostyle 2.2-2.5 lip-widths long, its aperture about one-third of its length. Guiding ring single, at 14-15 um or about 1.5 lip-widths from anterior end. Odontophore simple, rod-like, 1.1-1.2 times the odontostyle length. Nerve ring encircles the anterior slender part of oesophagus at 127-135 um from anterior end of body. Basal expanded portion of oesophagus occupying about 47-55% of total oesophageal length. Cardia elongate-conoid, 20-23 um or about one-third of corresponding body-width long. Location of oesophageal gland nuclei and their orifices as in Table - I.

Reproductive system amphidelphic. Vulva transverse pore, vagina thick-walled, 20-22 um or about half of corresponding body-width, sclerotized distally. Oviduct-uterus junction indistinct. Prerectum about 5-6 anal body-widths long. Rectum about 1-2 anal body-widths long. Tail very long, filiform, about 14-16 anal body-widths long with acute terminus.

Male: Supplements an adanal pair and ventromedians arranged in two groups of 9-10 each, with 1-2 poorly developed inbetween the two groups. Spicules about two anal body-widths long. Lateral guiding pieces about one-fifth of the spicule length. Prerectum about nine anal body-widths long, reaching

well beyond the range of supplements. Tail short, convex-conoid, less than one anal body-width long, with 2-3 caudal pores on each side.

Type habitat and locality: Soil around roots of jute, Corchorus sp. from district Howrah, West Bengal.

Type specimens: Collected in March 1979; holotype female on slide Calodorylaimus indicus n. sp./1; paratype females and males on slides Calodorylaimus indicus n. sp./2-3.

Differential diagnosis: Calodorylaimus indicus n. sp. differs from C. octo Andrássy, 1969 in having a smaller body, in the shape of lip region, differently shaped amphidial apertures, shorter odontostyle, longer oesophagus, posterior vulva, shorter tail and in having smaller spicules (L = 3.0-3.6 mm; b = 6.0; c = 5.0-5.5; V = 36-37; odontostyle = 32-35 um and spicules = 57-60 um in C. octo).

GENUS *DREPANODORYLAIMUS* JAIRAJPURI, 1966

Jairajpuri (1966) erected the genus *Drepanodorylaimus* with *D. filiformis* as the type species. Andrássy (1969 & '71) transferred four more species from the genera *Dorylaimus* and *Mesodorylaimus* and also added two new species to this genus. Coomans & Coomans (1973) added another species from Mexico. The genus at present includes eight species from all over the world. The males in this genus were not reported earlier. However, in the present work the males of *D. flexus* (Thorne & Swanger, 1936) Andrassy, 1969 and also of *D. renvicki* (van der Linde, 1938) Andrássy, 1969 were found. Their tails are rounded and they possess numerous ventromedian supplements, and a short prerectum. Hence the placement of this genus under the subfamily Mesodorylaiminae Andrássy, 1969 is justified.

In the opinion of the present author, as will also be evident from the descriptions given hereunder, the two species *D. flexus* and *D. renvicki* are strikingly similar to each other except for some minor differences in body size, in the shape of lip region, size of odontostyle and prerectum. They have, however, been retained as separate species pending study of their type material.

Diagnosis (amended): Body length usually 1-2 mm; cuticle finely striated. Lip region truncate, continuous or offset by

a depression. Odontostyle long, asymmetrical, and some what bent in the middle. Guiding ring single or 'double'. Odontophore rod-like. Anterior slender part of oesophagus expands very gradually and some times almost continuous with the posterior expanded part. Cardia elongate-conoid. Female reproductive system amphidelphic. Vulva transverse or longitudinal. Prerectum in males short, beginning within the range of supplements. Spicules dorylaimoid. Ventromedian supplements contiguous. Tail long filiform in females and short, conoid with rounded tip in males.

Type species: Prapanodorylaimus filiformis Jairajpuri, 1966

Other species: P. arganoi Zullini, 1973
P. brevicaudatus Andrássy, 1970
P. flexus (Thorne & Swanger, 1936) Andrássy, 1969
P. macramphidius Andrássy, 1971
P. picardi (Altherr, 1963) Monteiro, 1970
P. remicki (van der Linde, 1938) Andrássy, 1969
P. szczygielskyi (Andrassy, 1960) Andrássy, 1969

PRAPANODORYLAIMUS SZCZYGIELSKYI (ANDRÁSSY, 1960) ANDRÁSSY, 1969

Dimensions:

Females (5): L = 1.47-1.54 mm; a = 36-44; b = 3.9-4.1; c = 5-6; c' = 11-14; V = 46-51; G_1 = 9-10; G_2 = 9-10;

odontostyle = 24-27 um; odontophore = 24-25 um; oesophagus = 362-390 um; prerectum = 60-66 um; rectum = 38-47 um; tail = 262-292 um; ABD = 23-25 um.

Habitat and locality: Soil around roots of grasses and mosses from Changharia, district Chamoli, Uttar Pradesh.

Remarks: Prapanodorylaimus ackeaayi is being reported here for the first time from India. The present specimens conform well with those described by Andrassy (1960) except that those have a slightly shorter tail (c = 4-5 in type specimens).

DREPANODORYLAIMUS PLEXUS (THORNE & SWANGER, 1936) ANDRÁSSY, 1969

(Fig. 3, A - D)

Dimensions:

Kumaun population:

Females (4): L = 2.18-2.28 mm; a = 45-46; b = 4.7-5.0; c = 6-7; c' = 13-14; V = 48-52; G_1 = 10-14; G_2 = 10-15; odontostyle = 28-29 um; odontophore = 24-25 um; oesophagus = 448-459 um; prerectum = 68-86 um; rectum = 42-46 um; tail = 326-363 um; ABD = 24-27 um.

Male: L = 1.80 mm; a = 40; b = 4.0; c = 60; V = 53; odontostyle = 28 um; odontophore = 24 um; oesophagus = 451 um; spicules = 42 um; lateral guiding pieces = 12 um; ventromedian

supplements = 10; prorectum = 106 um; rectum = 47 um; tail = 30 um; ABD = 33 um.

Manipur population:

Female (3): L = 2.03-2.21 mm; a = 45-47; b = 4.4-4.5; c = 6-8; c' = 10-15; V = 46-49; G_1 = 11-14; G_2 = 12-14; odontostyle = 29-30 um; odontophore = 24-25 um; oesophagus = 455-485 um; prorectum = 76-110 um; rectum = 44-49 um; tail = 270-400 um; ABD = 26 um.

Male: L = 1.96 mm; a = 43; b = 4.0; c = 76; T = 55; odontostyle = 30 um; odontophore = 26 um; oesophagus = 481 um; spicules = 44 um; lateral guiding pieces = 12 um; ventromedian supplements = 12; prorectum = 105 um; rectum = 49 um; tail = 26 um; ABD = 34 um.

Description:

Female: Body ventrally curved upon fixation, tapering slightly anterior to base of oesophagus, posteriorly ending in a filiform tail. Cuticle finely striated. Lateral chords about one-fifth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region truncated, continuous with body contour, 13-14 um or about one-third of body-width at base of oesophagus. Labial papillae not projecting above the contour of lip region.

Amphids cup-shaped, their aperture 7-8 um or about half of corresponding body-width wide. Odontostyle asymmetrical, about two lip-widths long, its aperture about one-third of its length. Guiding ring 'double', at 16-18 um or 1.2-1.4 lip-width from anterior end. Odontophore simple rod-like, slightly smaller than odontostyle length. Nerve ring at 140-145 um from anterior end of body. Basal expanded portion of oesophagus occupying about 43-46% of total oesophageal length. Cardia obconoid, 24-30 um or slightly more than half body-width long. Location of oesophageal gland nuclei and their orifices as in Table - I.

Reproductive system amphidelphic. Vulva a transverse pore; vagina thick-walled about half of corresponding body-width. Prerectum about 3-4 anal body-widths long. Rectum 1-2 anal body-widths long. Tail long filiform, about 10-15 anal body-widths long with two caudal pores on each side.

Male: Supplements an adanal pair and a series of 10-12 ventromedians. Spicules arcuate about 1.5 anal body-widths long. Lateral guiding pieces rod-like, about one-fourth of the spicules length. Prerectum about three anal body-widths long. Tail short, conoid, less than one anal body-width long with two caudal pores on each side.

Habitats and Localities: Soil around roots of (1) wild tree

(unidentified) from Tanakpur, District Nainital, Uttar Pradesh. (ii) paddy, Oryza sativa L., from Imphal, Manipur.

Remarks: Prepanodorylaimus filiens is reported here for the first time from India with first report of its males. The present specimens are similar to those described by Thorne & Swanger (1936) except that these have more slender body and slightly shorter tail (a = 31; c = 7.1 in the type specimens).

PREPANODORYLAIMUS BIRICKI (VAN DER LINDE,1938) ANDRASSY, 1969

(Fig. 3, E-F)

Dimensions:

Females (7): L = 1.56-1.98 mm; a = 35-38; b = 3.8-4.6; c = 6-7; c' = 9-10; V = 48-50; G_1 = 12-16; G_2 = 10-16; odontostyle = 30-32 um; odontophore = 24-26 um; oesophagus = 381-429 um; prorectum = 54-69 um; rectum = 45-53 um; tail = 255-282 um; ABD = 25-31 um.

Male: L = 1.53 mm; a = 33; b = 3.9; c = 64; V = 54; odontostyle = 30 um; odontophore = 26 um; oesophagus = 389 um; spicules = 45 um; lateral guiding pieces = 12 um; ventromedian supplements = 13; prorectum = 115 um; tail = 24 um; ABD= 33 um.

Description:

Female: Body ventrally curved upon fixation, tapering slightly anterior to base of oesophagus, posteriorly ending in

a filiform tail. Cuticle finely striated. Lateral chords about one-fifth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region truncated, almost continuous with the body contour, 13-15 um or about one-third of body-width at base of oesophagus. Labial papillae projecting above the contour of lip region. Amphids cup-shaped, their apertures 7-8 um or about half of the corresponding body-width wide. Odontostyle asymmetrical, slightly more than two lip-widths long, its aperture about one-third of its length. Guiding ring 'double', at 18-20 um or about 1.4 lip-width from anterior end. Odontophore simple rod-like, 0.8-0.9 times the odontostyle length. Nerve ring at 130-155 um from anterior end. Basal expanded portion of oesophagus occupying about 43-48% of total oesophageal length. Cardia elongate-conoid, 25-30 um or slightly more than half lip-width long. Location of oesophageal nuclei and their orifices as in Table - I.

Reproductive system amphidelphic. Vulva transverse; vagina thick-walled, about half of the corresponding body-width long. Prerectum about two anal body-widths long. Rectum about 1-2 anal body-widths long. Tail long, filiform about 9-10 anal body-widths long with two caudal pores on each side.

Male: Supplements an adanal pair and a series of 13 ventromedians. Spicules about 1.5 anal body-widths long. Lateral guiding pieces slightly less than one-fourth of spicules length. Prerectum about four anal body-widths long. Tail short, conoid, less than one anal body-width long, with two caudal pores on each side.

Habitat and locality: Soil around roots of wild tree (unidentified) from Laxman Jhula, district Pauri Garhwal, Uttar Pradesh.

Remarks: Prismatodorylaimus rauwicki is recorded here for the first time from India. The Indian specimens are similar to those described by the original author except that they have a slightly longer prerectum (prerectum less than one anal body-width in type specimens). The male has, of course, been recorded for the first time.

GENUS *OPISTHODORYLAIMUS* n. GEN.

During the course of the present work some populations of nematodes very similar to *Mesodorylaimus* were found, but these possess a wider odontostyle and mono-opisthodelphic reproductive system, which are unique for the family Dorylaimidae. *Mesodorylaimus* is already a heterogeneous genus and in order to avoid further confusion a new genus, *Opisthodorylaimus* is being proposed here for the reception of these nematodes. On detailed study these populations were found to represent three different species all of which are new to science and are described below.

Diagnosis: Body usually 1.0-1.5 mm long. Cuticle smooth or with fine transverse striations. Lip region continuous. Cephalic framework not sclerotised. Odontostyle broad and thick with wide aperture; about one-third of its length. Guiding ring single, may appear 'double'. Odontophore rod-like. Oesophagus muscular abruptly enlarged near its middle. Cardia elongate-conoid. Female reproductive system mono-opisthodelphic. Vulva transverse or longitudinal, with or without sclerotisation. Anterior uterine sac very small or absent. Prerectum in males short, within the range of supplements. Spicules slightly arcuate; lateral guiding pieces rod-like; ventromedian supplements subcontiguous. Tail elongate-

conoid to long filiform in females and short conoid in males.

Type species: Opisthodorylaimus magoodi n. sp.

Other species: O. caudatus n. sp.

O. saccatus n. sp.

Relationship: The new genus Opisthodorylaimus differs from the genus Mesodorylaimus in having a broad odontostyle and monoopisthodelphic reproductive system.

OPISTHODORYLAIMUS MAGOODI N.SP.

(Fig. 4)

Dimensions:

Paratype females (10): L = 1.30-1.42 mm; a = 28-33; b = 4.2-4.5; c = 5; c' = 10-12; V = 40-45; G_2 = 13-15; odontostyle = 19-21 um; odontophore = 23-25 um; oesophagus = 299-312 um; prerectum = 41-46 um; rectum = 29-39 um; tail = 264-311 um; ABD = 25-27 um.

Holotype female: L = 1.33 mm; a = 32; b = 4.4; c = 5; c' = 10; V = 42; G_2 = 14; odontostyle = 21 um; odontophore = 23 um; oesophagus = 300 um; prerectum = 41 um; rectum = 35 um; tail = 264 um; ABD = 26 um.

Paratype males (3): L = 1.05-1.16 mm; a = 26-27; b =

3.8-4.1; c = 32-33; T = 55-57; odontostyle = 19-20 um; odontophore = 23-24 um; oesophagus = 279-297 um; spicules = 38-39 um; lateral guiding pieces = 6-7 um; ventromedian supplements = 10-11; prorectum = 57-78 um; rectum = 42-44 um; tail = 32-36 um; ABD = 28-30 um.

Description:

Female: Body straight or slightly ventrally curved upon fixation, tapering towards both extremities. Cuticle finely striated, 2 um thick at midbody and 5 um on tail. Lateral chords about one-fourth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region truncated, continuous with body contour, 13-15 um or about one-third of body-width at base of oesophagus. Amphids stirrup-shaped, their apertures 6-7 um or about half of the corresponding body-width wide. Odontostyle 1.2-1.5 lip-widths long, its aperture about one-third of its length. Guiding ring 'double' at 10-11 um or 0.7-0.8 lip-width from anterior end. Odontophore rod-like, 1.1-1.3 times the odontostyle length. Nerve ring at 108-120 um from anterior end. Basal expended portion of oesophagus occupying about 43-46% of oesophageal length. Cardia elongate-conoid, 16-19 um long. Location of oesophageal gland nuclei and their orifices as given in Table-I.

Reproductive system mono-opisthodelphic. Vulva a transverse slit; vagina 11-13 um or about one-third of corresponding body-

width long, sclerotised distally. Anterior uterine sac completely absent. Oviduct-uterus junction indistinct. Prerectum about two anal body-widths long. Rectum 1.1-1.5 anal body-width long. Tail long filiform, about 10-12 anal body-widths long with 1-2 caudal pores on each side.

Male: Supplements an adanal pair and 10-11 closely spaced ventromedians. Spicules about 1.3 anal body-width long. Lateral guiding pieces rod-shaped, about one-sixth of spicules length. Prerectum about 2-3 anal body-widths long, terminating within the range of supplements. Tail short, bluntly-conoid, about one anal body-width long, with 1-2 caudal pores on each side.

Type habitat and locality: Soil around roots of mosses and grasses, from Dhool, district Mandi, Himachal Pradesh.

Type specimens: Collected by Dr. Maqsood Ahmad in May 1977; holotype female on slide Onithodorylaimus maqsoodi n. sp./1; paratype males and females on slides O. maqsoodi n. sp./2-5.

The new species has been named after my senior colleague, Dr. Maqsood Ahmad who has done good work on the dorylaim nematodes of India.

OPISTHOLAIMUS CAUDATUS n. sp.

(Fig. 5)

Dimensions:

Paratype females (8): L = 1.35-1.57 mm; a = 31-34; b = 4.0-4.5; c = 12-15; c' = 4-5; V = 47-48; G_2 = 13-20; odontostyle = 18-19 um; odontophore = 21-23 um; oesophagus = 326-345 um; prorectum = 34-48 um; rectum = 39-44 um; tail = 90-115 um; ABD = 27-30 um.

Holotype female: L = 1.43 mm; a = 32; b = 4.3; c = 13; c' = 4; V = 47; G_2 = 20; odontostyle = 18 um; odontophore = 23 um; oesophagus = 326 um; prorectum = 45 um; rectum = 40 um; tail = 113 um; ABD = 27 um.

Mussoorie population:

Females (5): L = 1.28-1.48 mm; a = 42-44; b = 4.0-4.6; c = 11-15; c' = 4; V = 44-48; G_2 = 9-16; odontostyle = 18-19 um; odontophore = 22-23 um; oesophagus = 315-327 um; prorectum = 41-46 um; rectum = 38-40 um; tail = 97-114 um; ABD = 27-28 um.

Description:

Female: Body ventrally curved upon fixation, tapering towards extremities. Cuticle finely striated, 2 um thick at midbody and 4-5 um on tail. Lateral chords about one-fourth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region truncated, continuous with body contour, 12-13 um or about one-third of body-width at base of oesophagus. Amphid stirrup-shaped, their apertures 5-6 um or about half of the corresponding body-width wide. Odontostyle about 1.4-1.6 lip-widths long, its aperture about one-third of its length. Guiding ring 'double', at 10-11 um or 0.7-0.8 lip-width from anterior end. Odontophore simple rod-like, 1.1-1.3 times the odontostyle length. Nerve ring at 120-130 um from anterior end of body. Basal expanded portion of oesophagus occupying about 42-46% of oesophageal length. Cardia elongate-conoid, 19-23 um long. Location of oesophageal gland nuclei and their orifices as given in Table - I.

Reproductive system mono-opisthodelphic. Vulva circular, vagina 19-20 um or about half of the corresponding body-width long. Anterior uterine sac completely absent. Sphincter present at oviduct-uterus junction. Prerectum 1.5-1.6 anal body-widths long. Rectum 1.4-1.5 anal body-widths long. Tail elongate-conoid, dorsally curved, about 4-5 anal body-widths long with two caudal pores on each side.

Male: Not found.

Type habitat and locality: Soil around roots of sheesham, Dalbergia sissoo from Rajpur, district Dehradun, Uttar Pradesh.

Other habitat and locality: Soil around roots of ferns and

mosses from Mussoorie, district Dehradun, Uttar Pradesh.

Type specimens: Collected in March 1978; holotype on slide Opisthodorylaimus caudatus n. sp./1; paratypes on slides Opisthodorylaimus caudatus n. sp./2-5.

Differential diagnosis: Opisthodorylaimus caudatus n. sp. comes close to O. macrodi n. sp., but differs in the shape and location vulva, and in having a shorter and differently shaped tail (c = 4.5-5.3; V = 40-45; vulva transverse, tail long filiform in O. macrodi).

OPISTHODORYLAIMUS CAUDATUS N. SP.

(Fig. 6)

Dimensions:

Paratype female: L = 1.24 mm; a = 30; b = 4.3; c = 5; c' = 11; V = 40; C_2 = 12; odontostyle = 18 um; odontophore = 211 um; oesophagus = 285 um; prorectum = 35 um; rectum = 32 um; tail = 254 um; ABD = 23 um.

Holotype female: L = 1.21 mm; a = 34; b = 4.6; c = 5; c' = 12; V = 35; C_2 = 11; odontostyle = 18 um; odontophore = 21 um; oesophagus = 262 um; prorectum = 30 um; rectum = 31 um; tail = 246 um; ABD = 21 um.

Description:

Female: Body slightly ventrally curved upon fixation, tapering towards extremities. Cuticle finely striated, 2 um thick at midbody and 4-5 um on tail. Lateral chords about one-fourth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region truncated, slightly offset from body by a depression, 13 um or about one-third of body-width at base of oesophagus. Amphids stirrup-shaped, their apertures 5-6 um or about half of corresponding body-width wide. Odontostyle about 1.4 lip-width long, its aperture about one-third of its length. Guiding ring single, at 10-11 um or 0.7-0.8 lip-width from anterior end. Odontophore simple rod-like, about 1.2 times the odontostyle length. Nerve ring at 109-121 um from anterior end of body. Basal expanded portion of oesophagus occupying about 43-46% of oesophageal length. Cardia elongate-conoid, 18-19 um long. Location of oesophageal gland nuclei and their orifices as given in Table - I.

Reproductive system mono-opisthodelphic. Vulva circular with strongly sclerotized lips. Vagina about half of corresponding body-width long. Anterior uterine sac very small. Sphincter present at oviduct-uterus junction. Prorectum 1.6-1.8 anal body-widths long. Rectum about 1.4 anal body-width long. Tail long filiform with pointed terminus, about

11-12 anal body-widths long with 1-2 caudal pores on each side.

Male: Not found.

Type habitat and locality: Soil around roots of mosses and grasses from Mandal, district Chamoli, Uttar Pradesh.

Type specimens: Collected in October 1979; holotype on slide Cristhodorylaimus saccatus n. sp./1; paratype on slide Cristhodorylaimus saccatus n. sp./2.

Differential diagnosis: Cristhodorylaimus saccatus n. sp. comes close to C. magnoodi n. sp. and C. caudatus n. sp., but differs from the former in having a smaller body, in the shape of vulva and in having an anterior uterine sac (L = 1.30-1.42 mm; vulva transverse and anterior uterine sac absent in C. magnoodi). From C. caudatus n. sp. it differs in having anteriorly located vulva, in the presence of vaginal sclerotisation and anterior uterine sac, and in the shape and size of tail (c = 11-15; V = 44-48; vagina unsclerotised, anterior uterine sac absent, tail elongate-conoid in C. caudatus n. sp.).

GENUS AFRODORYLAIMUS ANDRÁSSY, 1964

Andrássy (1964) proposed the genus Afrodorylaimus with A. bwana as its type species, and transferred Eudorylaimus coniculatus also to this genus. In 1969, Andrássy transferred another species Mesodorylaimus beaumonti Altherr, 1952 to Afrodorylaimus. In the present work, specimens of Afrodorylaimus coniculatus (Andrássy, 1961) Andrássy, 1964 were collected from Chamoli, Uttar Pradesh and have been described hereunder.

Diagnosis: Body length usually 1-5 mm, cuticle smooth or finely striated. Lip region continuous or offset by a depression. Odontostyle long, relatively narrow with aperture about one-third of its length. Guiding ring single. Odontophore rod-like. Basal expanded portion of oesophagus cylindroid, about half of oesophageal length. Cardia elongate-conoid. Female reproductive system amphidelphic. Vulva transverse. Prerectum in males short, beginning within the range of supplements. Spicules long, dorylaimoid. Ventromedian supplements few, relatively large, slightly spaced. Tail long filiform in females and short, conoid with pointed terminus in males. Caudal papillae in males strongly developed.

Type species: Afrodorylaimus bwana Andrássy, 1964

Other species: A. basmenti (Altherr, 1952) Andrássy, 1969

A. coniculatus (Andrássy, 1961) Andrássy, 1964

AFROLAIMUS CONICULATUS (ANDRÁSSY, 1961) ANDRÁSSY, 1964

(Fig. 7)

Dimensions:

Females (5): L = 1.18-1.26 mm; a = 35-40; b = 3.5-3.9; c = 5-6; c' = 11-14; V = 49-53; G_1 = 7-8; G_2 = 8-9; odontostyle = 23-24 um; odontophore = 19-20 um; oesophagus = 315-325 um; prerectum = 42-46 um; rectum = 26-30 um; tail = 225-255 um; ABD = 18-21 um.

Male: L = 1.19 mm; a = 32; b = 3.5; c = 33; T = 51; odontostyle = 24 um; odontophore = 19 um; oesophagus = 338 um; spicules = 36 um; lateral guiding pieces = 12 um; ventromedian supplements = 8; prerectum = 66 um; tail = 36 um; ABD = 26 um.

Description:

Female: Body ventrally arcuate upon fixation, tapering towards both extremities. Cuticle finely striated. Lateral chords about one-fourth of body-width at midbody.

Lip region truncated, almost continuous with body contour, 10-11 um or about one-third of body-width at base of oesophagus.

Amphids stirrup-shaped, their apertures 7-8 um or about half of corresponding body-width wide. Odontostyle about two lip-widths long, its aperture about one-third of its length. Guiding ring single, at 12-13 um or about one lip-width from anterior end. Odontophore simple, rod-like, 0.8-0.9 times the odontostyle length. Nerve ring at 120-124 um from anterior end of body. Basal expanded portion occupying about 38-42% of total oesophageal length. Cardia elongate-conoid, 20-23 um or more than half of the corresponding body-width long. Location of oesophageal gland nuclei and their orifices as in Table - I.

Reproductive system amphidelphic. Vulva a transverse pore; vagina 14-15 um or about half of corresponding body-width long. Oviduct-uterus not clearly demarcated. Prerectum about 2-3 anal body-widths long. Rectum about 1-2 anal body-widths long. Tail long filiform about 11-14 anal body-widths long, with hooked terminus.

Male: Supplements an adanal pair and eight irregularly spaced ventromedians. Spicules about 1.5 anal body-widths long. Lateral guiding pieces about one-third of spicules length. Prerectum about two anal body-widths long, terminating within the range of supplements. Tail convex-conoid with pointed terminus, about 1.3 anal body-width long. Two well developed caudal pores present on tail.

Habitat and locality: Soil around roots of grasses, from district Chamoli, Uttar Pradesh.

Remarks: *Afrodorylaimus conicaudatus* is reported here for the first time from India. The present specimens fully correspond with those described by Andrássy (1961).

FAMILY PRODORYLAIMIDAE ANDRÁSSY, 1969

Diagnosis: Small to medium sized nematodes. Cuticle smooth or finely striated. Lip region continuous or offset by a constriction, with or without raised papillae. Amphids stirrup-shaped. Odontostyle dorylaimoid with wide lumen and aperture. Guiding ring 'double'. Odontophore simple, rod-like. Oesophagus highly muscular, dorylaimoid gradually enlarging near its middle. Cardia short to elongate-conoid. Female reproductive system amphidelphic. Vulva transverse, vagina thick-walled usually sclerotized distally. Spicules usually dorylaimoid; lateral guiding pieces may be present, ventromedian supplements one to numerous, spaced or contiguous. Prerectum short. Tail elongate-conoid to long filiform, similar in both sexes.

Type subfamily: Prodorylaiminae Andrássy, 1969

Other subfamily: Amphidorylaiminae Andrássy, 1976

SUBFAMILY PRODORYLAIMINAE ANDRÁSSY, 1969

Diagnosis: Cuticle smooth or finely transversely striated. Lip region continuous or offset by a depression. Odontostyle dorylaimoid with aperture about one-third of its length. Guiding ring 'double'. Oesophagus cylindroid with basal expanded portion about half of its length. Cardia short to elongate-conoid. Female reproductive system amphidelphic. Vulva transverse.

Males with dorylaimoid spicules and lateral guiding pieces. Ventromedian supplements few to numerous, spaced or contiguous. Prorectum short. Tail elongate-conoid to long filiform, similar in both sexes.

Type genus: Prodorylaimus Andrássy, 1959

Other genus: Prodorylaimium Andrássy, 1969

SUBFAMILY AMPHIDORYLAIMINAE ANDRÁSSY, 1976

Diagnosis: Cuticle finely striated. Lip region offset by a constriction. Odontostyle small, dorylaimoid, its aperture one-third of its length. Guiding ring 'double'. Odontophore dorylaimoid. Oesophagus cylindroid with basal expanded portion, less than half of its length. Cardia short, hemisphaeroid. Female reproductive system amphidelphic. Vulva transverse. Males with weak non-dorylaimoid spicules (without medium pieces), ventromedian supplements 1-5, spaced, beginning within the range of spicules. Tail long filiform, similar in both sexes.

Type and only genus: Amphidorylaimus Andrássy, 1960

KEY TO THE SUBFAMILIES AND GENERA OF PRODORYLAIMIDAE

1. Lip region set off, spicules narrow, non-dorylaimoid .....
..... Amphidorylaiminae. Amphidorylaimus

Lip region not set off, spicules broad, dorylaimoid .....
..... Prodorylaiminae 2

2. Ventromedian supplements numerous, contiguous .....
..... Prodorylaimus
Ventromedian supplements few, spaced ..... Prodorylaimium

GENUS PRODORYLAIMUS ANDRÁSSY, 1959

Andrássy (1959) proposed the genus Prodorylaimus for those species of Dorylaimus which do not show sexual dimorphism in tail shapes. Andrássy (1984), Altherr (1968), Zullini(1973) added more species to this genus. The genus at present comprises ten species. In the present work specimens of this genus were collected from Nainital, Uttar Pradesh. Upon detailed study they were found to represent a new species which is described hereunder. This being also the first report of the genus from India.

Diagnosis: Body usually 1-3 mm long. Cuticle smooth or finely striated. Lip region continuous or offset by a depression, usually with raised papillae. Amphids stirrup-shaped. Odontostyle dorylaimoid with wide lumen and aperture. Guiding ring 'double'. Odontophore rod-like. Oesophagus gradually enlarging, basal expanded portion about half of oesophageal length. Cardia short to elongate-conoid. Female reproductive system amphidelphic. Vulva transverse, vagina thick-walled, sclerotized distally. Males with dorylaimoid spicules, lateral guiding pieces and numerous contiguous ventromedian supplements, beginning above the range of spicules. Tail elongate-conoid to long filiform, similar in both sexes.

Type species: Prodorylaimus longicaudatus (Bütschli, 1874) Andrássy, 1959

Other species: P. andrassyi Zullini, 1973

P. brasiliensis (Meyl, 1956) Andrássy, 1959

P. dahli (Altherr, 1960) Andrássy, 1964

P. dolichurus (Loos, 1946) Siddiqi, 1969

P. filiarum Andrássy, 1964

P. longicaudatoides Altherr, 1968

P. obesus n. sp.

P. paralongicaudatus (Micoletzky, 1925) Andrássy, 1959

P. ranzii Zullini, 1973

P. riconensis (Geriech, 1954) Andrássy, 1959

ENDORYLAIMUS OBESUS n. sp.

(Fig. 8)

Dimensions:

Paratype females (10): L = 1.63-1.80 mm; a = 26-30; b = 4.6-5.2; c = 25-30; V = 50-56; c_1 = 21-27; c_2 = 20-27; odontostyle = 23-25 um; odontophore = 32-33 um; oesophagus = 345-363 um; prorectum = 55-68 um; rectum = 37-42 um; tail = 61-66 um; ABD = 30-33 um.

Holotype female: L = 1.83 mm; a = 33; b = 4.7; c = 27; V = 53; c_1 = 19; c_2 = 22; odontostyle = 27 um; odontophore = 32 um; oesophagus = 382 um; prorectum = 57 um; rectum = 54 um; tail = 67 um; ABD = 34 um.

Paratype males (5): L = 1.63-1.70 mm; a = 26-30; b = 4.7-5.2; c = 26-29; T = 57-57; odontostyle = 21-23 um; odontophore = 31-32 um; oesophagus = 324-358 um; spicules = 52-57 um; lateral guiding pieces = 13-14 um; ventromedian supplements = 15-18; prerectum = 98-124 um; tail = 59-62 um; ABD = 33-35 um.

Description:

Female: Body ventrally curved upon fixation, tapering towards both extremities. Cuticle finely striated, 3-4 um thick at midbody and 7-9 um on tail. Lateral chords about one-fourth of body-width at midbody.

Lip region offset by a depression, wider than adjoining body, 17-18 um or about one-third of body-width at base of oesophagus. Lips protruding out from the head contour. Amphids stirrup-shaped, their apertures 9-10 um or about half of corresponding body-width. Odontostyle 1.3-1.4 lip-widths long, its aperture about one-third of its length. Guiding ring 'double', 13-14 um or 0.7-0.8 lip-width from anterior end. Odontophore simple rod-like, 1.3-1.5 times the odontostyle length. Nerve ring at 123-150 um from anterior end of body. Basal expanded portion of oesophagus occupying about 42-46% of oesophageal length. Cardia short conoid. Location of oesophageal gland nuclei and their orifices as given in Table-I.

Reproductive system amphidelphic. Vulva transverse, vagina 24-26 um or about half of corresponding body-width, gonads well developed. Sphincter present at oviduct-uterus junction. Prerectum 1.6-2.2 anal body-widths long. Rectum 1.2-1.6 anal body-widths long. Tail elongate-conoid, dorsally curved about two anal body-widths long with two caudal pores on each side.

Male: Supplements an adanal pair and a contiguous series of 15-18 ventromedians. Spicules 1.4-1.6 anal body-widths long, lateral guiding pieces about one-fourth of spicules length. Prerectum 3-4 anal body-widths long, terminating within the range of supplements. Tail elongate-conoid, dorsally bent about two anal body-widths long with two caudal pores on each side.

Type habitat and locality: Soil around roots of mosses and grasses from Ramgarh, district Nainital, Uttar Pradesh.

Type specimens: Collected by Dr. Wajih U. Khan in November 1977; holotype female and a paratype male on slide Prodorylaimus obesus n. sp./1; other paratype males and females on slides Prodorylaimus obesus n. sp./2-5.

Differential diagnosis: Prodorylaimus obesus n. sp. comes close to P. rionensis (Geriach, 1954) Andrássy, 1959 and P. brasiliensis (Boyl, 1956) Andrássy, 1959. It differs from

the former in having a smaller robust body, slightly smaller tail and posteriorly located vulva (L = 2.7-3.3 mm; a = 35-50; c = 24-25; V = 44-45 in P. rioensis). From P. brasiliensis it differs in having a longer robust body, posteriorly located vulva and in the number of ventromedian supplements (L = 1.1-1.3 mm; a = 40-43; V = 41-48; ventromedian supplements = 13-14 in P. brasiliensis).

GENUS *PRODORYLAIMIUM* ANDRÁSSY, 1969

The genus *Prodorylaimium* was established by Andrássy (1969) with *P. bricdamanense* (De Man, 1876) Andrássy, 1969 as its type species. *Prodorylaimium* differs from the genus *Prodorylaimus* Andrássy, 1959 in having only few (6-10) spaced ventromedian supplements. Andrássy (1972) transferred *Dorylaimus stenosoma* to this genus and later in 1978 added one more species, *P. alpinum* from Nepal. In the present work specimens of *Prodorylaimium* were collected from Chamoli, Uttar Pradesh which upon study were found to belong to the type species. This is the first record of the genus from India.

Diagnosis: Body usually 1.0-2.5 mm long. Cuticle finely striated. Lip region continuous or offset by a depression; lips amalgamated. Amphids stirrup-shaped with slit-like apertures. Odontostyle dorylaimoid with aperture about one-third of its length. Guiding ring 'double'. Odontophore rod-like. Oesophagus cylindroid with basal expanded portion about half of its length. Cardia short, conoid or hemispheroid. Female reproductive system amphidelphic. Vulva transverse. Males with dorylaimoid spicules, lateral guiding pieces and 6-10 spaced ventromedian supplements. Prerectum short. Tail long filiform, similar in both sexes.

Type species: Prodorylaimium brigdammense (De Man, 1876) Andrássy, 1969

Other species: P. stenoecum (De Man, 1876) Andrássy, 1972

P. alphium Andrássy, 1978

PRODORYLAIMIUM BRIGDAMMENSE (DE MAN, 1876) ANDRÁSSY, 1969

Dimensions:

Females (5): L = 1.49-1.74 mm; a = 41-45; b = 5.4-5.7; c = 5-6; c' = 13-15; V = 46-49; G_1 = 12-16; G_2 = 12-14; odontostyle = 13-14 um; odontophore = 17-18 um; oesophagus = 276-312 um; prerectum = 60-62 um; rectum = 27-31 um; tail = 259-344 um; ABD = 20-23 um.

Male: L = 1.43 mm; a = 45; b = 5.0; c = 5; c' = 12; odontostyle = 13 um; odontophore = 18 um; oesophagus = 282 um; spicules = 35 um; lateral guiding pieces = 9 um; ventromedian supplements = 7; prerectum = 76 um; tail = 274 um; ABD = 23 um.

Habitat and locality: Soil around roots of wild bushes from Govindghat, district Chamoli, Uttar Pradesh.

Remarks: The present specimens conform well with those described by De Man (1876) except for the slightly shorter tail and more posteriorly located vulva (c = 4.5-4.8; V = 38-41 in type specimens).

GENUS AMPHIDORYLAIMUS ANDRÁSSY, 1960

Andrássy (1960) erected the genus Amphidorylaimus for Dorylaimus infecundus Cobb in Thorne & Swanger, 1936 and placed it under the subfamily Dorylaiminae. Siddiqi (1969) transferred it to the family Cratonemátidae. Andrássy (1976) has placed it under a new subfamily Amphidorylaiminae in the family Prodorylaimidae. The genus at present comprises only three species. In the present work specimens of Amphidorylaimus were collected from Bangalore, Karnataka state. Upon detailed study these were found to represent a known species, A. fiscalicaudus Monteiro, 1970 which is described below. This being also the first report on the genus from India.

Diagnosis: Nematodes with slender bodies, less than 1 mm long. Cuticle finely striated. Lip region well offset by a constriction. Amphids stirrup-shaped. Odontostyle small, dorylaimoid. Guiding ring 'double'. Odontophore simple, rod-like. Oesophagus cylindroid with basal expanded portion less than half of its length. Cardia short, hemispheroid. Female reproductive system amphidelphic. Vulva transverse. Males with weak, non-dorylaimoid spicules. Ventromedian supplements 1-5, spaced, beginning within the range of spicules. Prerectum short. Tail long filiform, similar in both sexes.

Type species: Amphidorylaimus infecundus (Cobb in Thorne & Swanger, 1936) Andrássy, 1960

Other species: A. concoensis Andrássy, 1960

A. flacciliseude Monteiro, 1970

AMPHIDELOIDES FLACCILISEUDA MONTEIRO, 1970

(Fig. 9)

Dimensions:

Females (3): L = 0.91-1.00 mm; a = 44-48; b = 4.4-4.9; c = 4; c' = 16-22; V = 38-40; G_1 = 5-6; G_2 = 4-6; odontostyle = 9-10 um; odontophore = 16-17 um; oesophagus = 202-205 um; prerectum = 21-36 um; rectum = 21-22 um; tail = 214-269 um; ABD = 12-13 um.

Male: L = 0.87 mm; a = 42; b = 4.4; c = 4; c' = 16; T = 38; odontostyle = 9 um; odontophore = 16 um; oesophagus = 196 um; spicules = 18 um; ventromedian supplements = 1; prerectum = 30 um; tail = 234 um; ABD = 15 um.

Description:

Female: Body slightly ventrally curved upon fixation, tapering towards both extremities. Cuticle finely striated. Lateral chords about one-fourth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region wider than adjoining body, marked off by a constriction, 10-11 um or about half of body-width at base of

oesophagus. Labial papillae projecting above the contour of lip region. Amphids stirrup-shaped, their apertures 4-5 um or about half of corresponding body-width. Odontostyle about one lip-width long, its aperture about one-third of its length. Guiding ring 'double', at 5-6 um or about half lip-width from anterior end. Odontophore simple, rod-like, 1.5-1.6 times the odontostyle length. Nerve ring at 63-75 um from anterior end of body. Basal expanded portion occupying about 41-46% of oesophageal length. Cardia short, conoid, 7-8 um long. Location of oesophageal gland nuclei and their orifices as given in Table - I.

Reproductive system amphidelphic. Vulva transverse, vagina extending less than half of corresponding body-width. Prerectum 2-3 anal body-widths long. Tail long filiform with acute terminus, 16-22 anal body-widths long.

Male: Supplements an adanal pair and a single ventromedian, located just above the apicular range. Spicules poorly developed, non-dorylaimoid, about one anal body-width long. Prerectum about two anal body-widths long. Tail long filiform, about 16 anal body-widths long.

Habitat and locality: Soil around roots of wild tree from Ulsoor lake, district Bangalore, Karnataka state.

Remarks: The original description of Amphidorylaimus

FAMILY THORNEMATIDAE SIDDIQI, 1969

Diagnosis: Body small to moderate sized. Cuticle finely transversely striated. Lip region continuous or set off from body contour, with moderate to heavily sclerotized framework. Amphids stirrup-shaped, their walls may be sclerotized. Odontostyle cylindrical with wide lumen, aperture about one-third of its length. Odontophore simple, rod-like. Guiding ring single. Basal expanded portion of oesophagus less than half of total oesophageal length. Cardia hemispherical or elongated. Intestine polyecytous. Female reproductive system mono-opisthodelphic or amphidelphic. Vulva transverse, pre-equatorial. Males with long arcuate spicules and lateral guiding pieces. Ventromedian supplements few, spaced. Female tail rounded, elongate-conoid to long filiform. Male tail similar or dissimilar to female, when dissimilar, short and bluntly conoid.

Type subfamily: Thornemematinae Siddiqi, 1969

Other subfamily: Medalinematinae Baqri & Jana, 1980

SUBFAMILY THORNEMATINAE SIDDIQI, 1969

Diagnosis: Cuticle finely striated. Lip region continuous or set off from body contour, with moderately to heavily sclerotised framework. Amphids stirrup-shaped with slit-like apertures.

Odontostyle cylindrical with wide lumen, its aperture about one-third of its length. Odontophore rod-like. Guiding ring single. Basal expanded part of oesophagus cylindroid, less than half of total oesophageal length. Cardia hemispherical or elongate-conoid. Female reproductive system mono-opisthodelphic or amphidelphic. Vulva transverse. Males with dorylaimoid spicules, lateral guiding pieces and few spaced ventromedian supplements. Female tail elongate-conoid to long filiform, male tail short, bluntly conoid.

Type genus: Thornenema Andrassy, 1959

Other genera: Sicaecuttus Siddiqi, 1971

Jairajpuria Baqri & Jana, 1980

KEY TO SUBFAMILIES AND GENERA OF THORNENEMATIDAE
(After Baqri & Jana, 1980)

1. Tails similar in sexes ..... Medalinematinae ... 2
   Tails dissimilar in sexes ..... Thornenematinae ... 5

2. Tail short, rounded 3
   Tail elongate-conoid or long filiform 4

3. Female reproductive system mono-opisthodelphic.....Miliinema
   Female reproductive system amphidelphic ..... Timmineme

4. Female reproductive system mono-opisthodelphic .....
   ..... Indodorylaimus

Female reproductive system amphidelphic ..... Hedruris

5. Female reproductive system mono-opisthodelphic 6

Female reproductive system amphidelphic ..... Sicuttus

6. Lip region rounded, continuous or slightly narrower than adjoining body..... Thoracostoma

Lip region cap-like, well set off ..... Fairisucia

Genus Thornenema Andrassy, 1959

The genus Thornenema was proposed by Andrassy (1959) for those species of Dorylaimus which possess narrow amalgamated lip regions, mono-opisthodelphic reproductive systems and long filiform tails. Jairajpuri & Jairajpuri (1967) revised the genus and gave a key to its species. Recently, Jairajpuri et. al. (1980) have proposed Thornenema loofi for Thornenema thienemanni apud Jairajpuri, 1966 and transferred T. thienemanni (Schneider, 1936) to the genus Dorylaimoides Thorne & Swanger, 1936. They also gave a key to species of Thornenema.

Diagnosis: Body usually 0.9-2.0 mm long, almost straight to ventrally curved upon fixation. Lip region very narrow, continuous with body contour. Lips amalgamated, labial framework weakly to strongly sclerotized. Amphids stirrup-shaped with slit-like apertures. Odontostyle small, cylindrical with a distinct dorsal aperture, about one-third of its length. Guiding ring single. Odontophore rod-like. Basal expanded portion of oesophagus about one-third of oesophageal length. Cardia hemispherical or short, conoid. Female reproductive system mono-opisthodelphic. Vulva transverse, pre-equatorial. Males with massive arcuate spicules, lateral guiding pieces and 5-6 spaced ventromedian supplements. Tail dissimilar in sexes, elongate-conoid to long filiform in females and short, bluntly conoid in males.

Type species: Discolaimus silvaticus Thorne, 1939) Andrássy, 1959

Other species: A. acutus (Thorne, 1939) Andrássy, 1959

A. cavacaudati (Cordeiro, 1955) Andrássy, 1959

A. caudatum Jairajpuri et al., 1979

A. discocaudatum (Cobb in Thorne & Swanger, 1936) Andrássy, 1959

A. goodeyi Jairajpuri et al., 1979

A. indicaudatum Jairajpuri et al., 1979

A. leefi Jairajpuri et al., 1980

A. mauritianum (Williams, 1959) Bagri & Jairajpuri, 1969

A. sylvicoides (Williams, 1959) Andrássy, 1960

A. tarsconurus (Heyns, 1963) Coomans et al., 1976

A. wichmi Yeates, 1970

ANCHOLAIMUS CAVACAUDATI (CORDEIRO, 1955) ANDRÁSSY, 1959

(Fig. 10)

Diagnosis:

Measurements:

Females (5): L = 1.05-1.07 mm; a = 31-32; b = 4.0-4.2; c = 11-12; V = 45-46; c_2 = 13-16; odontostyle = 11-12 um; odontophore = 16-17 um; oesophagus = 252-266 um; prerectum = 42-50 um; rectum = 27-33 um; tail = 88-90 um; ABD = 20-21 um.

Male: L = 1.19 mm; a = 34; b = 4.5; c = 50; T = 65; odontostyle = 12 um; odontophore = 17 um; oesophagus = 261 um; spicules = 35 um; lateral guiding pieces = 8 um; ventromedian supplements = 5; precloacum = 90 um; tail = 24 um; ABD = 22 um.

Geographical population:

Females (5): L = 0.91-1.01 mm; a = 32-33; b = 3.8-4.2; c = 10-11; V = 43-46; c_2 = 12-15; odontostyle = 11-12 um; odontophore = 15-17 um; oesophagus = 245-248 um; precloacum = 50-55 um; rectum = 26-27 um; tail = 93-108 um; ABD = 20-21 um.

Description:

Female: Body slightly ventrally arcuate upon fixation, tapering towards both extremities. Cuticle finely striated, thickest at tail. Lateral chords about one-eighth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region smoothly rounded, continuous with body contour, 10-11 um or about one-third of body-width at base of oesophagus. Cephalic framework weakly sclerotized. Amphids stirrup-shaped, their apertures 2-3 um or about half of lip-width. Odontostyle slightly longer than lip-width; its aperture about two-fifth of its length. Guiding ring at base. Odontophore rod-like, 1.2-1.4 times the odontostyle length. Nerve ring encircling anterior stronger part of oesophagus

at 93-100 um from anterior end. Basal cuticularized portion of oesophagus occupying about 46-51% of total oesophageal length. Location of oesophageal gland nuclei and their orifices as given in Table - I.

Reproductive system mono-opisthodelphic. Vulva transverse; vagina thick-walled. Anterior uterine sac rudimentary, less than half vulval body-width long. Distinct sphincter present at oviduct-uterus junction. Prerectum 2-3 anal body-widths long. Rectum 1-2 anal body-widths long. Tail dorsally convex-conoid in its first quarter, then elongate conoid with a dorsally bent terminus, 4-5 anal body-widths long with two caudal pores on each side.

Male: Supplements an adanal pair and five regularly spaced ventromedians first ventromedian a little above apicular range. Spicules coryxdinoid, about 1.5 anal body-widths long, lateral guiding pieces rod-like about one-fourth of spicules length. Prerectum about four anal body-widths long. Tail short, conoid gradually more than one anal body-width long with two caudal pores on each side.

Habitats and localities: Soil around roots of (i) Citrus sp. from Dharamsala, district Kangra, Himachal Pradesh, (ii) wild tree from district Chamoli, Uttar Pradesh.

Remarks: Ghorpadeia cavicentis was described from Brazil by

Cordeiro (1955) based on a single female. Roof (1964) described two females from Venezuela. Siddiqi (1965) reported this species from India. Monteiro (1970) for the first time recorded its male, and the illustration of the male tail showed a pop-like structure attached to the tail. The present male of *L. cavalcantii* has a typical thornless tail as described by Gupta & Jairajpuri (1971) for *L. goldyi*, and has a lesser number of supplements compared to that described by Monteiro. The females of the present population correspond well with those described by Cordeiro (1955), Roof (1964) and Siddiqi (1965).

GENUS *JAIRAJURIA* BAGRI & JANA, 1980

Bagri & Jana (1980) described the genus *Jairajuria* from West Bengal. *Jairajuria* differs from *Thornenema* in having set off and cap-like lip region, more distance between S_2I and S_2O and a comparatively longer uterine sac. In the present work a second new species of this genus has been described.

Diagnosis: Body less than 1 mm long, slightly curved ventrally upon fixation. Lip region sclerotized, set off and cap-like. Amphids stirrup-shaped, closely situated to lateral lips. Odontostyle small, cylindrical with a distinct dorsal aperture, about one-third of its length. Guiding ring single. Odontophore simple, dorylaimoid. Basal expanded portion of oesophagus about one-third of oesophageal length. Cardia hemispherical. Female reproductive system mono-opisthodelphic. Vulva transverse, pre-equatorial. Anterior uterine sac about one vulval body-width long. Males with dorylaimoid spicules and 4-5 spaced ventromedian supplements. Tails dissimilar in sexes, elongate-conoid in females and short bluntly conoid in males.

Type species: *Jairajuria aligunj* Bagri & Jana, 1980

Other species: *J. oryzae* n. sp.

[illegible] sp.

(Fig. 11)

Dimensions:

Paratype females (8): L = 0.72-0.85 mm; a = 30-32; b = 5.2-5.3; c = 10-12; V = 39-42; G_1 = 3-4; G_2 = 16-21; odontostyle = 11-12 um; odontophore = 15-16 um; oesophagus = 150-159 um; prorectum = 60-75 um; rectum = 16-25 um; tail = 68-84 um; ABD = 15-18 um.

Holotype female: L = 0.85 mm; a = 30; b = 5.3; c = 12; V = 41; G_1 = 3; G_2 = 20; odontostyle = 12 um; odontophore = 15 um; oesophagus = 159 um; prorectum = 68 um; rectum = 18 um; tail = 68 um; ABD = 17 um.

Paratype males (4): L = 0.69-0.80 mm; a = 29-30; b = 4.6-5.0; c = 28-40; T = 34-39; odontostyle = 11-12 um; odontophore = 15-16 um; oesophagus = 152-159 um; spicules = 22-24 um; lateral guiding pieces = 3-4 um; ventromedian supplements = 4-5; prorectum = 75-82 um; tail = 21-25 um; ABD = 17-18 um.

Description:

Female: Body slightly ventrally curved upon fixation, tapering gradually towards both extremities. Cuticle finely striated, 1 um thick at midbody and 3-4 um on tail. Lateral chords about one-fifth to one-fourth of body-width at midbody.

Lateral, dorsal and ventral body pores indistinct.

Lip region sclerotized, offset, slightly wider than adjoining body, 7-8 um or about one-third of body-width at base of oesophagus. Amphids stirrup-shaped, their apertures 4-5 um or about half of corresponding body-width. Odontostyle 1.4-1.5 lip-widths long, its aperture about one-third of its length. Guiding ring single, 6-7 um or 0.7-0.9 lip-width from anterior end. Odontophore rod-like, 1.2-1.4 times the odontostyle length. Nerve ring encircling anterior slender part of oesophagus at 74-78 um from anterior end. Basal expanded portion of oesophagus occupying about 32-36% of oesophageal length. Cardia short, conoid with rounded terminus. Location of oesophageal gland nuclei and their orifices as given in Table - I.

Reproductive system mono-opisthodelphic. Vulva transverse, vagina thick-walled about one-third of vulval body-width. Anterior uterine sac 27-30 um or about one vulval body-width long. Posterior branch normal. Oviduct-uterus junction indistinct. Prerectum 3-5 anal body-widths long. Rectum about one anal body-width long. Tail elongate-conoid, tapering gradually to rounded terminus, 4-5 anal body-widths long with one or two caudal pores on each side.

Male: Supplements an adanal pair and 4-5 regularly spaced ventromedians. Spicules dorylaimoid, 1.2-1.4 anal body-width long. Lateral guiding pieces rod-shaped, about one-sixth of spicules length. Prerectum 4-5 anal body-widths long. Tail short, bluntly conoid, 1.2-1.4 anal body-width long with two caudal pores on each side.

Type habitat and locality: Soil around roots of paddy, Oryza sativa L., from district Bhubaneswar, Orissa state.

Type specimens: Collected in March 1979; holotype female on slide Jairaiturie oryzae n. sp./1; paratype males and females on slides Jairaiturie oryzae n. sp./2-5;

Differential diagnosis: Jairaiturie oryzae n. sp. differs from J. shamimi Bagri & Jano, 1980 in having slightly longer body, differently shaped lip region and amphids posteriorly situated vulva, unsclerotized vagina and in the absence of sphincter at oviduct-uterus junction (L = 0.6-0.7 mm; V = 46-50; vagina sclerotized and a well developed sphincter present at oviduct-uterus junction in J. shamimi).

FAMILY [illegible] JAIRAJPURI, 1965 (SIDDIQI, 1969)

Diagnosis: Cuticle smooth or finely striated. Lateral hypodermal chords may be provided with distinct glandular bodies. Lip region set off by constriction or a depression. Lips angular or forming flaps arched over the pharynx. Amphids stirrup-shaped, labial or post-labial. Odontostyle cylindrical, dorylaimoid with wide lumen and aperture. Guiding ring single or 'double'. Odontophore simple, rod-like. Oesophagus cylindroid muscular, anterior slender portion expands near its middle to form the basal expanded portion. Cardia hemispherical to elongate-conoid. Cardiac disc present or obscure. Female reproductive system mono-opisthodelphic or amphidelphic. Vulva transverse or longitudinal. Males with well developed arcuate spicules, lateral guiding pieces and few to numerous spaced or contiguous ventromedian supplements. Tail short hemispheroid to elongate-conoid, similar in both sexes.

Type and only subfamily: Eudorylaimatinae Jairajpuri, 1965

Type genus: Eudorylaimus Jairajpuri, 1965

Other genera: Crassolabium Yeates, 1967

Scaptolaimus Thorne, 1974

Subdorylaimus Andrássy, 1959

Indoryctes Baqri & Khan, 1979

Cochinema Heyns, 1963

Labrocnema Thorne, 1939

Remarks: Siddiqi (1969) had synonymized *Crassolabium* and *Judaimema* with *Axonchium*, but Andrássy (1976) has recognized both of them as valid genera.

Recently, Baqueir & Khan (1979) have proposed a new family Cochinematidae with one subfamily Cochinematinae for the genera *Cochinema* and *Indocochinema* based mainly on the unusually anterior position of the amphids. This has not been recognized here. However, a separate subfamily may be justified for these two genera.

KEY TO THE GENERA OF CHROMADORIDAE

1. Amphids labial 2
   Amphids postlabial 3
2. Female reproductive system mono-opisthodelphic .....
   .....*Indocochinema*
   Female reproductive system amphidelphic ..... *Cochinema*
3. Female reproductive system mono-opisthodelphic .....
   ..... *Acumenlaxus*
   Female reproductive system amphidelphic 4
4. Basal expanded portion of oesophagus bilobed....*Judaimema*
   Basal expanded portion of oesophagus not bilobed 5

5. Lips well developed, guiding ring 'double'..... Labronema
   Lips not well developed, guiding ring single 6

6. Cuticularised pieces present in lip region.....
   .....Craspedolaimus
   Cuticularised pieces absent in lip region .....
   ..... Rudovlaimus

GENUS *ECUMENICUS* THORNE, 1974

Thorne (1974) proposed the genus *Ecumenicus* for *Eudorylaimus monohystera* (De Man, 1880) Andrássy, 1959 and differentiated it from *Eudorylaimus* because of its having a mono-opisthodelphic reproductive system and lateral chords provided with a single line of well developed cells. The genus comprises a single species which is of world-wide distribution. The morphological characters and dimensions of this species from different continents are most remarkable for their similarity. Thorne & Swanger (1936) provided the description of a male of this species based on Kreis (1930). Thorne (1961), however, did not describe the male though the figure of male tail was provided. Coomans & Geraert (1962) considered occurrence of male in this species doubtful or if they existed they were very rare. Thorne (1974) also did not mention about male.

In the present work specimens of *Ecumenicus* were found in soil samples that were collected from Chapra and Dehradun. The present specimens show remarkable similarities with those described by Thorne & Swanger (1936), Thorne (1961) Coomans & Geraert (1962) and Thorne (1974). This being also the first report of this genus from India. No males were found.

Diagnosis: Body small (1.0-1.4 mm long). Cuticle finely striated. Lateral hypodermal chords with a single line of cells

and from each of these a minute tube leads to a pore at the surface. Lip region set off by a slight depression. Lips distinct. Amphids stirrup-shaped. Odontostyle dorylaimoid with aperture about one-third of its length. Guiding ring single. Odontophore simple rod-like. Basal expanded portion of oesophagus occupying less than half of oesophageal length. Dorsal oesophageal gland nucleus located almost adjacent to its pore. Female reproductive system mono-opisthodelphic. Vulva a transverse slit with slightly sclerotized labia and vagina extending posteriad. Anterior uterine sac absent. Tail bluntly digitate.

Type and only species: Scutellicus monohysterus (De Man, 1880) Thorne, 1974

SCUTELLICUS MONOHYSTERA (DE MAN, 1880) THORNE, 1974

(Fig. 12)

Dimensions:

Character correlation:

Females (5): n = 1.00-1.10 mm; a = 31-37; b = 4.4-5.3; c = 29-33; V = 34-37; G_2 = 8-20; odontostyle = 11-12 um; odontophore = 16-17 um; oesophagus = 206-255 um; prerectum = 42-56 um; rectum = 20-23 um; tail = 32-35 um; ABD = 20 um.

Sichikeh population:

Females (5): L = 1.03-1.15 mm; a = 35-39; b = 4.9-5.1; c = 30-34; V = 34-35; G_2 = 13-15; odontostyle = 11-12 um; odontophore = 16-17 um; oesophagus = 215-230 um; prerectum = 35-51 um; rectum = 20-23 um; tail = 33-35 um; ABD = 20-23 um.

Description:

Female: Body slightly ventrally curved upon fixation, tapering towards both extremities. Cuticle finely striated. Lateral chords about one-fourth of body-width at midbody.

Lip region offset by a depression; lips distinct and labial papillae elevated. Odontostyle about one lip-width long with aperture about one-third of its length. Guiding ring single, 5-6 um or about half lip-width from anterior end. Odontophore simple, rod-like, about 1.4 times the odontostyle length. Nerve ring at 82-97 um from anterior end of body. Basal expanded portion of oesophagus occupying about 37-40% of oesophageal length. Cardia discoid then bluntly conoid. Location of oesophageal gland nuclei and their orifices as in Table - I.

Reproductive system mono-opisthodelphic. Vulva transverse, vagina posteriorly directed. Cuticularized pieces present at vulva-vagina junction. Prerectum 2-3 anal body-

widths long. Rectum about one anal body-width long. Tail short digitate, 1.5-1.8 anal body-widths long. Caudal pores indistinct.

Male: Not found

Habitats and localities: Soil around roots of (i) pea, Pisum sativum L., from district Chapra, Bihar (ii) paddy, Oryza sativa L. from Rishikesh, district Dehradun, Uttar Pradesh.

GENUS *LABRONEMA* THORNE, 1939

Thorne (1939) erected the genus *Labronema* for those species of *Dorylaimus* which possess six inarching lip-flaps over the entrance to stoma, and designated *L. ferox* as the type species. He (l.c.) also transferred six species from *Dorylaimus* to *Labronema*. Altherr (1950-'72), Krall (1957), Williams (1959), Coreort (1962), Heyns (1963), Andrássy (1967 & '78), Ferris (1968), Monteiro (1970), Thorne (1974) etc., added species to this genus. Andrássy (1978) described a new species from Nepal and also provided a key to the valid species. The species of this genus show two distinctly different types of lip region which may form the basis for future splitting of this genus.

In the present work specimens of *Labronema* that were found in the soil samples collected from different localities in India and Nepal, represent *Labronema mauritiense* Williams, 1959 and two new species which are described below.

Diagnosis: Body robust, usually 1.0-4.0 mm long. Cuticle finely striated. Lateral hypodermal chords uniformly granular without gland-like organs. Lip region offset by a deep constriction, broad and thick; inner flaps arched over a wide pharynx. Amphids stirrup-shaped, with slit-like apertures. Odontostyle dorylaimoid with wide lumen and aperture. Guiding

ring sclerotised, 'double'. Odontophore rod-like. Anterior portion of oesophagus generally stronger than in related genera, enlarged by a gradual expansion. Basal expanded portion of oesophagus about half of oesophageal length. Cardia short to elongate-conoid. Female reproductive system amphidelphic. Vulva transverse or longitudinal; vagina heavily sclerotised distally. Males with dorylaimoid spicules, lateral guiding pieces and numerous contiguous supplements. Tails hemispheroid to subdigitate, similar in both sexes, with numerous caudal papillae.

Type species: Labronema ferox Thorne, 1939

Other species: L. alticola (Menzel in Hofmanner & Menzel, 1914) Thorne, 1939

L. chilense Andrassy, 1967

L. coxii (Liebermann, 1928) Andrassy, 1960

L. cramervitzense (Micoletzky, 1922) Thorne, 1939

L. digitatum Sukul et al., 1975

L. estonicum Krall, 1957

L. eudorylaimoides Coomans, 1962

L. fluviatile Altherr, 1958

L. goodeyi Altherr & Delamare Deboutteville, 1972

L. hyalinum (Thorne & Swanger, 1936) Thorne, 1939

L. longiflori Andrassy, 1978

L. magnum Altherr, 1972

L. mauritianae Williams, 1959

L. nainianae n. sp.

L. obesum Thorne, 1974

L. octoduranae Altherr, 1950

L. pacificum (Cobb, 1906) Thorne, 1939

L. paesleri Poetzold, 1955

L. paraparvum n. sp.

L. pygmaeum Loyns, 1963

L. rapax Thorne, 1974

L. stechlinense Altherr, 1968

L. thorni Ferris, 1968

L. variecaudatum (Thorne, 1929) Thorne, 1939

L. viron Monteiro, 1970

LABRONEMA MAURITIANAE WILLIAMS, 1959

Dimensions:

Females (3): L = 1.41-1.42 mm; a = 27-29; b = 4.3-4.7; c = 52-60; V = 47-52; G_1 = 16-17; G_2 = 17-18; odontostyle = 19-20 um; odontophore = 26 um; oesophagus = 312-324 um; prerectum = 97-105 um; rectum = 36-42 um; tail = 23-27 um; ABD = 27-29 um.

Male: L = 1.32 mm; a = 27; b = 4.4; c = 60; T = 59; odontostyle = 20 um; odontophore = 25 um; oesophagus = 296 um; spicules = 53 um; lateral guiding piece = 20 um; ventromedian

supplements = 20; preanctum = 173 um; tail = 22 um; ABD = 30 um.

Habitat and locality: Soil around roots of banana. Mang Paradiasica L. from Harihana, district Siwan, Bihar.

Remarks: Paratylenchus mauritianus is reported here for the first time from India. The present specimens conform well with those described by Williams (1959) and Thorne (1964) except that these have slightly anterior vulva (V = 60 in type specimens).

Paratylenchus [illegible] N. sp.

(FIG. 13)

Dimensions:

Paratype females (7): L = 1.40-1.53 mm; a = 26-29; b = 3.8-4.0; c = 67-74; V = 58-59; G_1 = 13-15; G_2 = 14-15; odontostyle = 23-25 um; odontophore = 32-34 um; oesophagus = 354-405 um; preanctum = 56-69 um; rectum = 29-36 um; tail = 20-21 um; ABD = 32-35 um.

Holotype female: L = 1.41 mm; a = 25; b = 4.0; c = 71; V = 58; G_1 = 12; G_2 = 16; odontostyle = 24um; odontophore = 33 um; oesophagus = 351 um; preanctum = 52 um; rectum = 36 um; tail = 20 um; ABD = 33 um.

Description:

Female: Body slightly ventrally curved upon fixation, tapering towards both extremities. Cuticle finely striated, its thickness 2-3 um at midbody and 7-8 um on tail. Lateral chords one-sixth to one-fifth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region well offset by a constriction, 17-18 um or about one-third of body-width at base of oesophagus, wider than adjoining body. Lips well developed, angular, separated. Amphidial pouches clearly divided into two chambers (dubleu), their apertures 8-9 um or about half of corresponding body-width. Odontostyle 1.3-1.4 lip-width long, its aperture about one-third of its length. Guiding ring 'double', 13-15 um or 0.7-0.8 lip-width from anterior end. Odontophore simple, rod-like, 1.3-1.5 times the odontostyle length. Nerve ring at 123-135 um from anterior end of body. Basal expanded portion of oesophagus occupying about 46-52% of oesophageal length. Cardia well developed, conoid with rounded terminus, 14-15 um long. Location of oesophageal gland nuclei and their orifices as given in Table - I.

Reproductive system amphidelphic. Vulva transverse, vagina sclerotized distally, occupying about half of corresponding body-width. Oviduct-uterus separated by a faint constriction. Prerectum about two anal body-width long. Rectum about one anal body-width long.

Tail short, hemispherical 0.6-0.7 anal body-width long with one or two caudal pores on each side.

Male: Not found.

Type habitat and locality: Soil around roots of wild plants from the bank of Phewa lake, district Pokhara, Nepal.

Type specimens: Collected in May 1978; holotype on slide Labronema nepalense n. sp./1; paratypes on slides Labronema nepalense n. sp./2-4;

Differential diagnosis: Labronema nepalense n. sp. comes close to L. guttneri (Schneider, 1937) Thorne, 1939 and L. octodurense Althorr, 1950 but differs from both in having a longer body and shorter tail. It further differs from the former in the shape of lip region and anteriorly located vulva (L = 1.2 mm; c = 56; V = 69 in L. guttneri). From L. octodurense it differs in having a longer odontostyle and differently shaped tail (L = 1.2 mm; c = 49; odontostyle = 12 um in L. octodurense).

[illegible] L. n. sp.

(Fig. 14)

Dimensions:

Paratype females (4): L = 1.54-1.72 mm; a = 27-30; b = 4.0-4.5; c = 43-45; V = 56-59; G_1 = 17-23; G_2 = 16-23;

odontostyle = 25–27 um; odontophore = 37–38 um; oesophagus = 378–381 um; prerectum = 95–101 um; rectum = 45–46 um; tail = 34–38 um; ABD = 33–37 um.

Holotype female: L = 1.86 mm; a = 31; b = 4.6; c = 40; V = 56; G_1 = 20; G_2 = 19; odontostyle = 28 um; odontophore = 38 um; oesophagus = 400 um; prerectum = 98 um; rectum = 47 um; tail = 40 um; ABD = 36 um.

Paratype females (2): L = 1.81–1.85 mm; a = 29–32; b = 4.6–4.8; c = 50–52; V = 60–61; odontostyle = 26–27 um; odontophore = 36 um; oesophagus = 380–393 um; spicules = 60–65 um; lateral guiding pieces = 18 um; ventromedian supplements = 19–20; prerectum = 150–159 um; tail = 35–36 um; ABD = 36–40 um.

Chanoli population:

Females (5): L = 1.67–1.85 mm; a = 26–29; b = 4.2–4.6; c = 52–56; V = 57–58; G_1 = 17–22; G_2 = 17–23; odontostyle = 25–27 um; odontophore = 37–39 um; oesophagus = 374–421 um; prerectum = 87–95 um; rectum = 38–52 um; tail = 27–31 um; ABD = 33–37 um.

Male: L = 1.76 mm; a = 29; b = 4.3; c = 49; T = 51; odontostyle = 27 um; odontophore = 39 um; oesophagus = 402 um; spicules = 57 um; lateral guiding pieces = 18 um; ventromedian

supplements = 16; prerectum = 132 um; rectum = 52 um; tail = 36 um; ABD = 37 um.

Ichihara population:

Females (3): L = 1.53-1.64 mm; a = 27-28; b = 4.2-4.3; c = 55-63; V = 58-59; G_1 = 19-21; G_2 = 16-17; odontostyle = 27 um; odontophore = 34-39 um; oesophagus = 351-386 um; prerectum = 53-56 um; rectum = 45-46 um; tail = 26-28 um; ABD = 33-34 um.

Male: L = 1.49 mm; a = 30; b = 4.1; c = 45; T = 49; odontostyle = 26 um; odontophore = 36 um; oesophagus = 363 um; spicules = 61 um; lateral guiding pieces = 17 um; ventromedian supplements = 15; prerectum = 114 um; rectum = 55 um; tail = 33 um; ABD = 34 um.

Description:

Female: Body slightly ventrally curved upon fixation, tapering towards both extremities. Cuticle finely striated, its thickness 3-4 um at midbody and 9-10 um at tail. Lateral chords narrow, one-eighth to one-seventh of body-width at midbody. Dorsal and ventral body pores distinct in anterior region.

Lip region well offset by a constriction, wider than adjoining body, 19-21 um or about one-third of body-width at base of oesophagus. Lips well developed, angular. Amphids

stirrup-shaped, their apertures 10-11 um or about half of corresponding body-width. Odontostyle 1.3-1.4 lip widths long, its aperture about one-third of its length. Guiding ring 'double', 14-15 um or 0.7-0.8 lip-width from anterior end. Odontophore simple, rod-like 1.3-1.4 times the odontostyle length. Nerve ring at 138-166 um from anterior end of body. Basal expanded portion of oesophagus occupying about 42-48% of oesophageal length. Cardia a narrow disc with a conoid portion extending into the intestine. Location of oesophageal gland nuclei and their orifices as given in Table-I.

Reproductive system amphidelphic. Vulva transverse, vagina sclerotized distally, occupying about one-third of corresponding body-width. A distinct sphincter present at oviduct-uterus junction. Uterus usually filled with one or two eggs, 72-73 x 34-36 um. Prerectum 2-3 anal body-widths long. Rectum about one anal body-width long. Tail short, digitate about one anal body-width long with a pair of caudal pores on each side.

Male: Supplements an adanal pair and 15-20 regularly spaced ventromedians. Spicules 1.5-1.8 anal body-widths long, lateral guiding pieces simple rod-like. Prerectum 3-4 anal body-widths long. Rectum 1-2 anal body-widths long. Tail digitate, about one anal body-width long with a pair of caudal pores on each side.

Type habitat and locality: Soil around roots of wild plants from Mussoorie, district Dehradun, Uttar Pradesh.

Other habitats and localities: Soil around roots of (i) grasses and mosses from Govindghat, district Chamoli, Uttar Pradesh. (ii) wild plants from Phewa lake, district Pokhara. Nepal.

Type specimens: Collected in March 1978; holotype female on slide *Labronema paralarax* n. sp./1; paratype males and females on slides *Labronema paralarax* n. sp./2-4.

Differential diagnosis: *Labronema paralarax* n. sp. comes close to *L. mauritiense* Williams, 1959 and *L. rapax* Thorne, 1974 but differs from both in having a longer odontostyle and in the shape of tail. It further differs from the former in having a longer body, in the shape of vagina, in having longer spicules and in the arrangement of ventromedian supplements (L = 1.1-1.5 mm; odontostyle = 21-23 um; spicules = 53 um in *L. mauritiense*). From *L. rapax* it can further be differentiated in having a shorter body, in the shape of lip region and amphids, in having a transverse vulva, and in the number of ventromedian supplements (L = 2.3 mm; odontostyle = 18 um; vulva longitudinal and ventromedian supplements 21-28 in *L. rapax*).

FAMILY NORDIIDAE J. JAIRAJPURI & A. H. SIDDIQI, 1964 (SIDDIQI, 1969)

Diagnosis: Cuticle finely striated. Lip region continuous or set off by a depression or constriction from body contour. Lips rounded or angular. Amphids stirrup-shaped with slit-like apertures. Odontostyle slender, attenuated and long with narrow lumen and aperture or sharp pointed with obscure aperture. Guiding ring single or 'double'. Odontophore elongate, rod-like may be with basal swellings or flanges. Oesophagus muscular expanding near its middle. Cardia hemispherical or elongate. Intestine polycytous. Female reproductive system mono-opisthodelphic or amphidelphic. Vulva transverse or pore-like. Males with arcuate spicules, lateral guiding pieces and 3-12 spaced ventromedian supplements. Tail hemispherical to long filiform, similar in both sexes.

Type subfamily: Nordiinae Jairajpuri & A. H. Siddiqi, 1964

Other subfamilies: Cephalodorylaiminae Jairajpuri, 1967
Enchodeliinae n. subfam.
Aungentinae Siddiqi, 1969

SUBFAMILY CEPHALODORYLAIMINAE JAIRAJPURI, 1967

Diagnosis (emended): Body narrow, moderate sized. Lip region continuous with the body. Inner cephalic papillae greatly

elongated, 'setae-like'. Amphids large, stirrup-shaped with slit-like apertures. Odontostyle greatly attenuated, its aperture obscure. Guiding ring single. Odontophore rod-like. Female reproductive system amphidelphic. Vulva transverse. Males with arcuate spicules, lateral guiding pieces and 7-8 spaced ventromedian supplements. Tail elongate-conoid, similar in both sexes.

Type genus: Cephalodorylaimus Jairajpuri, 1967

Other genus: Ottolaimus Kirjanova, 1951

SUBFAMILY ECHINOLAIMINAE N. SUBFAM.

Diagnosis: Body small sized, usually 1 mm or less. Cuticle finely striated. Lip region continuous or marked off with a slight depression or constriction, with prominent or obscure labial papillae. Amphids stirrup-shaped with apertures as wide as lip-width or less. Odontostyle long, slender and attenuated with small or obscure aperture. Guiding ring single or apparently 'double'. Odontophore simple, rod-like. Oesophagus with an anterior slender and basal expanded part. Female reproductive system mono-opisthodelphic or amphidelphic. Vulva transverse, pore-like or slit-like. Males with arcuate spicules, lateral guiding pieces and 2-4 spaced mammiliform ventromedian supplements. Tail short, conoid to elongate-conoid, similar in both sexes.

Type genus: Enchodelium Andrassy, 1963

Other genera: Malekus Thorne, 1974

Goncuntus Thorne, 1974

Orivarutus Siddiqi, 1971

Relationship: The new subfamily Enchodeliinae is related to the subfamilies Nordiinae and Pungentinae. However, it can be differentiated from Nordiinae in having slender bodies, smaller odontostyle and odontophore, longer basal expanded portion of oesophagus and very few mammiliform ventromedian supplements. From Pungentinae it can be differentiated in having narrower odontostyle, in the absence of basal knobs or flanges at base of odontophore, in having single or very weak 'double' guiding ring, usually large amphids and very few ventromedian supplements.

KEY TO SUBFAMILIES AND GENERA OF NORDIIDAE

1. Inner cephalic papillae 'setose' or ear like .....
..... Cephalodoryleiminae

Inner cephalic papillae not setose 3

2. Excretory pore distinct; tail short conoid .....Ottolaimus

Excretory pore indistinct; tail elongate-conoid .....
..... Cephalodoryleimus

3. Odontostyle 3-5 lip-widths long ... Nordiinae. Longidoralia

Odontostyle less than 3 lip-widths long 4

4. Odontophore usually provided with basal knobs or flanges ..... Punctentinae ...5
Odontophore not provided with basal knobs or flanges ... . Enchodeliinae ...8

5. Cuticularised pieces present around oral aperture .... Puncentus
Cuticularised pieces not present around oral aperture 6

6. Tail long filiform .... Enchodorus
Tail rounded or elongate-conoid 7

7. Peculiar striations near vulva region present .... Rhyncholaimus
Peculiar striations near vulva region absent .... Enchodelus

8. Odontostyle narrow, aperture indistinct 9
Odontostyle not so narrow, aperture distinct 10

9. Labial papillae very prominent, projecting from head contour ..... Paleleus
Labial papillae indistinct, not projecting from head contour ..... Conocuntus

10. Lip region continuous; first pair of subventrals close to each other ..... Enchodelium
Lip region set off; first pair of subventrals widely separated from each other ..... Oriverutus

GENUS CEPHALOCORYLAIMUS JAIRAJPURI, 1967

Jairajpuri (1967) described the genus Cephalocorylaimus from Bareilly, Uttar Pradesh with C. papillatus as its type. The genus is peculiar because of having greatly enlarged 'setae-like' inner cephalic papillae. The description of genus was based on females only. In the present work both the males and the females of C. papillatus were found in soil samples collected from Coimbatore, Tamil Nadu and are described hereunder.

Diagnosis (emended): Body narrow, about 1 mm long. Cuticle finely striated. Lip region continuous with body contour. Inner cephalic papillae greatly enlarged, 'setae-like'. Amphids large, stirrup-shaped with slit-like apertures. Odontostyle greatly attenuated, aperture obscure. Guiding ring single. Odontophore rod-like. Oesophagus consists of an anterior slender part gradually expanding to the enlarged portion, occupying nearly half of total oesophageal length. Cardia hemispheroid. Female reproductive system amphidelphic. Vulva transverse. Males with arcuate spicules, lateral guiding pieces and 7-8 spaced ventromedian supplements. Tail elongate-conoid, ventrally curved, similar in both sexes.

Type and only species: Cephalocorylaimus papillatus Jairajpuri, 1967

CEPHALOBELLUS PAPILLATUS JAIRAJPURI, 1967
(Fig. 15)

Measurements:

Females (5): L = 1.09-1.26 mm; a = 49-52; b = 4.1-4.3; c = 10-12; V = 50-52; G_1 = 10-12; G_2 = 11-12; odontostyle = 18-19 um; odontophore = 20-21 um; oesophagus = 255-295 um; prerectum = 55-59 um; rectum = 17-19 um; tail = 103-108 um; ABD = 16-17 um.

Males (4): L = 1.12-1.20 mm; a = 49-52; b = 3.6-4.1; c = 11-13; T = 67-68; odontostyle = 20-21 um; odontophore = 21-22 um; oesophagus = 270-280 um; spicules = 26-30 um; lateral guiding pieces = 10-11 um; ventromedian supplements = 7-8; prerectum = 68-79 um; rectum = 22-25 um; tail = 88-108 um; ABD = 17-19 um.

Description:

Female: Body narrow, cylindroid, ventrally curved upon fixation, tapering towards extremities. Cuticle finely striated. Lateral, dorsal and ventral body pores indistinct.

Lip region amalgamated, elevated conoid, 10-11 um or about one-third of body-width at base of oesophagus. The six inner cephalic papillae greatly enlarged, 2-3 um long, 'seta-like', the outer cephalic papillae also slightly raised. Amphids funnel-shaped, their apertures 10-11 um or about as wide

as lip-width. Odontostyle very thin, attenuated about two lip-widths long, its aperture obscure. Odontophore very thin slightly longer than odontostyle length. Nerve ring encircles the anterior slender part of oesophagus at 120-132 um from anterior end. Basal expanded portion of oesophagus occupies about 41-46% of the oesophageal length. Cardia hemispheroid. Location of oesophageal gland nuclei and their orifices as given in Table - I.

Reproductive system amphidelphic. Vulva transverse, vagina 12-13 um or about half of the corresponding body-width. Distinct sphincter at oviduct-uterus junction present. Prerectum 3-4 anal body-widths long. Rectum slightly longer than one anal body-width. Tail ventrally arcuate, elongato-conoid, 6-7 anal body-widths long with a caudal pore on each side.

Male: Supplements an adanal pair and 7-8 irregularly spaced ventromedians. Spicules 1.7-1.8 anal body-widths long. Lateral guiding pieces rod-like about one-third of spicules length. Prerectum 4-5 anal body-widths long. Rectum 1.2-1.4 anal body-width long. Tail ventrally arcuate, elongato-conoid 5-6 anal body-widths long with a pair of caudal pores on each side.

Habitat and locality: Soil around roots of bamboo, Bambusa spp. from Walayar forest, district Coimbatore, Tamil Nadu.

Remarks: The females of the present material are similar to those described by Jairajpuri (1967) except for having longer odontostyle (odontostyle = 14-17 um in type specimens).

GENUS *ORIVERUTUS* SIDDIQI, 1971

The genus *Oriverutus* was erected by Siddiqi (1971) for some species of *Eudorylaimus* Andrássy, 1959, *Longidorella* Thorne, 1939 and *Tylencholaimus* De Man, 1876; which possess attenuated odontostyle, abnormally large amphids, widely separated anterior subventral gland nuclei and few ventromedian supplements. He transferred *Eudorylaimus sundarus* Williams,1964 *Longidorella hastata* (Andrássy, 1963) Jairajpuri & Hooper,1969, *Longidorella imner* Khan & Khan, 1964 and *Tylencholaimus hastatus* Siddiqi, 1964 to *Oriverutus*. Siddiqi (l.c.) also described a new species *O. lobatus* from Nigeria. Baqri (1980) added a new species *O. annamalus* from Tamil Nadu, India.

Siddiqi (1971) placed the genus *Oriverutus* under the family Qudsianematidae, because of its similarity with *Eudorylaimus*. As this genus possesses an attenuated odontostyle and only 2-4 ventromedian supplements, it is more closely related to the genera *Consaculus* and *Malenus* and hence it has been placed in the subfamily Enchodelilinae n. subfam. along with these genera.

In the present work specimens of *Oriverutus* were found in the soil samples collected from the silent valley, Kerala State. Upon detailed study it was found out that these specimens do not belong to any of the known species of this genus and hence a new species is proposed for their reception.

Diagnosis: Body small sized, about 1 mm long. Cuticle finely striated. Lip region well marked with prominent papillae. Amphids abnormally large. Oral opening and pharynx circular. Odontostyle attenuated with narrow lumen and sharply pointed tip. Guiding ring single, usually indistinct. Oesophagus gradually enlarging near its middle; duct of dorsal gland long, its nucleus comparatively smaller in size and located at some distance from gland opening, opening of anterior subventral glands widely separated from each other and lying in anterior half of oesophageal enlargement while the opening of posterior subventral glands are close together at some distance from base of oesophagus. Cardia rounded, usually surrounded anteriorly by prominent glandular tissue. Female reproductive system mono-opisthodelphic or amphidelphic. Vulva pore-like or slit-like, vagina with or without sclerotization. Males with dorylaimoid spicules, lateral guiding pieces and 2-4 spaced penniliform ventromedian supplements. Tail elongate-conoid with terminus dorsally or ventrally directed, similar in both sexes.

Type species: Criverutus sundarus (Williams, 1964) Siddiqi, 1971

Other species: C. arcuatus Bagri, 1980
C. hastatus (Andrássy, 1963) Siddiqi, 1971
C. hastulatus Siddiqi, 1971
C. hastus n. sp.

L. impar (Khan & Khan, 1964) Siddiqi, 1971

L. lobatus Siddiqi, 1971

L. morbidus (Loof, 1964) n. comb.

LONGIDORUS HAMRUS n. sp.
(Fig. 16)

Dimensions:

Paratype females (5): L = 0.89-0.93 mm; a = 30-44; b = 3.0-3.8; c = 19-20; V = 49-50; G_1 = 11-13; G_2 = 12-15; odontostyle = 13-14 um; odontophore = 15-16 um; oesophagus = 238-288 um; prerectum = 41-53 um; rectum = 22-26 um; tail = 46-49 um; ABD = 19-20 um.

Holotype female: L = 0.92 mm; a = 31; b = 3.8; c = 19; V = 50; G_1 = 11; G_2 = 12; odontostyle = 13 um; odontophore = 15 um; oesophagus = 238 um; prerectum = 44 um; rectum = 24 um; tail = 49 um; ABD = 19 um.

Paratype males (4): L = 0.87-1.01 mm; a = 34-42; b = 3.4-3.7; c = 18-23; T = 52-55; odontostyle = 13-14 um; odontophore = 15-16 um; oesophagus = 236-293 um; spicules = 32-33 um; lateral guiding pieces = 8-9 um; ventromedian supplements = 2; prerectum = 85-96 um; rectum = 31-32 um; tail = 42-55 um; ABD = 20-23 um.

Description:

Female: Body ventrally arcuate upon fixation, tapering towards both extremities. Cuticle finely striated, 1 um thick at midbody and 2-3 um at tail. Lateral chords about one-third of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region slightly offset by a depression, about one-third of body-width at base of oesophagus. Lips prominently protruding out. Amphids bell-shaped, their apertures almost as wide as lip-width. Odontostyle attenuated, 1.4-1.6 lip-widths long, its aperture 2-3 um or about one-fifth of its length. Guiding ring 5-6 um or 0.5-0.6 lip-width from anterior end. Odontophore 1.1-1.2 times the odontostyle length. Nerve ring at 78-107 um from anterior end. Basal expanded portion of oesophagus occupies 37-[illegible]% of oesophageal length. Cardia conoid with rounded terminus. Location of oesophageal gland nuclei and their orifices as given in Table - 1.

Reproductive system amphidelphic. Vulva transverse, vagina about half of the corresponding body-width. Prerectum 2-3 anal body-widths long. Rectum 1.1-1.3 anal body-width long. Tail elongate-conoid, dorsally bent, 2.3-2.4 anal body-widths long with two caudal pores on each side.

Male: Supplements an adanal pair and two well spaced mammiliform ventromedians. Spicules dorylaimoid, 1.4-1.6 anal body-widths long. Lateral guiding pieces about one-fourth of spicules length. Prerectum about four anal body-widths long. Rectum 1.3-1.4 anal body-width long. Tail elongate-conoid, dorsally bent, 2-3 anal body-widths long with two caudal pores on each side.

Type habitat and locality: Soil around roots of wild tree from Silent Valley, district Malaparum, Kerala State.

Type specimens: Collected in September 1980; holotype female and one paratype male on slide Orivorutus hastus n. sp./1; other paratype males and females on slides Orivorutus hastus n.sp./2-4.

Differential diagnosis: Orivorutus hastus n. sp. comes close to O. hastatus (Andrássy, 1963) Siddiqi, 1971 and O. arcuatus Baqri, 1980 but differs from the former in having bell-shaped amphids, shorter odontostyle, odontophore longer than odontostyle and in the number of ventromedian supplements (amphids cup-shaped, odontostyle 23-24 um, odontophore shorter than odontostyle and ventromedian supplements 4 in O. hastatus). It differs from O. arcuatus in the shape of lip region, differently shaped amphids, unsclerotized vagina, absence of sphincter at oviduct uterus junction, shorter and differently shaped tail, longer

spicules and in the arrangement of ventromedian supplements (amphids cup-shaped, vagina sclerotized, sphincter present at oviduct-uterus junction, tail ventrally curved, c = 15, spicules = 22 um; first ventromedian supplement within the range of spicules in *G. arcuatus*).

FAMILY CRATERONEMATIDAE SIDDIQI, 1969

Diagnosis: Cuticle thin with coarse transverse striations; musculature meromyarian. Lip region offset by a constriction. Stoma cup-shaped, anterior part of pharynx sclerotized or unsclerotized. Odontostyle dorylaimoid. Female reproductive system mono-prodelphic or amphidelphic. Vulva transverse. Intestine oligocytous. Males with simple weak spicules, lacking inner stiffening pieces or spicules may be dorylaimoid. Ventromedian supplements few, spaced. Tail similar in both sexes.

Type subfamily: Crateronematinae Siddiqi, 1969

Other subfamily: Lordellonematinae Siddiqi, 1969

SUBFAMILY CRATERONEMATINAE SIDDIQI, 1969

Diagnosis: Cuticle thin with coarse striations. Body pores indistict. Lip region offset by constriction, lips compact. Odontostyle slender with small aperture. Guiding ring sclerotized. Odontophore rod-like. Female reproductive system amphidelphic. Vulva pore-like. Males with simple weak spicules lacking inner stiffening pieces, and few spaced ventromedian supplements. Tail elongate-conoid, ventrally curved, similar in both sexes.

Type and only genus: Crateronema Siddiqi, 1969

SUBFAMILY LORDELLONEMATINAE SIDDIQI, 1969

Diagnosis: Cuticle finely striated, subcuticle loose and with coarse transverse striations. Somatic musculature apparently meromyarian. Body pores distinct, leading into prominent cuticularized ducts. Lip region offset by constriction, lips prominent and separated. Odontostyle dorylaimoid with wide lumen and aperture. Guiding ring single. Odontophore rod-like. Female reproductive system mono-, rodelphic or amphidelphic. Vulva transverse. Males with arcuate spicules, lateral guiding pieces and few low inconspicuous ventromedian supplements. Tail hemispheroid to elongate-conoid, similar in both sexes.

Type genus: Lordellonema Andrassy, 1960

Other genus: Forronemella Siddiqi, 1969

KEY TO SUBFAMILIES AND GENERA OF CRATERONEMATIDAE

1. Body pores conspicuous; lips separated ..... Lordellonematinae -- 2
   Body pores indistinct; lips compact ..... Crateronematinae, crateronema
2. Ventral body pores on entire body; tail short conoid ..... Lordellonema
   Ventral body pores limited to anterior region; tail elongate-conoid ..... Forronemella

GENUS *CRATERONEMA* SIDDIQI, 1969

Siddiqi (1969) proposed the genus *Crateronema* based on specimens collected from Fiji. The genus is typical in having prominent striations on the body. Monteiro (1970) added one more species to this genus. During the course of present work some specimens of this genus were collected from Bhubaneswar, Orissa state. On detailed study they were found to belong to the type species and have been described hereunder. This is the first record of this genus from India.

Diagnosis: Body slender, moderate sized, about 1 mm long. Cuticle with coarse striations. Oral opening wide, hexagonal. Lip region set off, lips compact not protruding out from the labial contour. Amphids cup-shaped. Odontostyle slender, attenuated with small aperture. Guiding ring sclerotised. Odontophore dorylaimoid. Oesophagus dorylaimoid enlarging near its middle. Cardia rounded. Female reproductive system amphidelphic. Vulva pore-like. Males with simple spicules and three spaced elevated ventromedian supplements. Tail elongate-conoid, ventrally curved, similar in both sexes.

Type species: *Crateronema aestivum* Siddiqi, 1969

Other species: *C. lordelloi* Monteiro, 1970

C. longevanis Nesterov, 1976

CRATERONEMA AGILIVUM SIDDIQI, 1969
(Fig. 17,F-G)

Dimensions:

Females (5): L = 1.05-1.12 mm; a = 50-55; b = 4.3-4.5; c = 11-12; V = 46-49; G_1 = 8-9; G_2 = 6-7; odontostyle = 11-12 um; odontophore = 15-17 um; oesophagus = 243-249 um; prerectum = 57-70 um; rectum = 12-17 um; tail = 90-97 um; AB = 14-15 um.

Description:

Female: Body ventrally curved upon fixation forming C-shape, cylindrical, tapering slightly anteriorly and more posteriorly. Cuticle and subcuticle marked with prominent transverse striations. Lateral chords about one-third of body-width at base of oesophagus. Lateral, dorsal and ventral body pores indistinct.

Lip region offset by a constriction, wider than the adjoining body, 12-13 um or about half of body-width at base of oesophagus; knob-like, bearing 7-8 annules. Amphids cup-shaped, their apertures 5-6 um or about half of the lip-width. Odontostyle attenuated, about one lip-width long with small aperture and narrow lumen. Sclerotised plates obscure. Guiding ring single. Odontophore simple, rod-like, 1.3-1.4 times the odontostyle length. Nerve ring at 86-90 um from anterior end.

Basal expanded portion of oesophagus occupying about 44-46% of total oesophageal length. Cardia short, rounded, 6-7 um long. Location of oesophageal gland nuclei and their orifices as given in Table - 1.

Reproductive system amphidelphic. Vulva pore-like, vagina thick-walled, sclerotized distally. Oviduct-uterus junction indistinct. Prerectum 4-5 anal body-widths long. Rectum about one anal body-width long. Tail semicircular, tapering to a rounded terminus, 6-7 anal body-widths long.

Male: Not found.

Habitat and locality: Soil around roots of paddy, Oryza sativa L., from district Bhubeneswar, Orissa state.

Remarks: The present specimens are almost identical to those described by Siddiqi (1969) except for poorly developed sclerotization in the stoma.

GENUS *LORDELLONEMA* ANDRÁSSY, 1960

Andrássy (1960) erected the genus *Lordellonema* for *Dorylaimus hauruensis* Lordello, 1957. The genus is peculiar in having conspicuous lateral and ventral body pores. Heyns (1963) described a genus *Thornema* with *T. parvum* as its type, but regarded it a junior synonym of *Lordellonema* in a foot-note in the same paper. Jairajpuri (1965) revised the genus *Lordellonema* and added a new species, *L. marriari* from Andamans, India. Jairajpuri (1966) added one more species *L. annulata* from Malawi. Siddiqi (1969) transferred *L. marriari* to *Amercolaimellus* Heyns, 1965. Thorne (1974) added a new species, *L. parvum* along with its male. In the present work specimens of *L. parvum* were found in Delhi and represent the first report of the genus from India.

Diagnosis: Cuticle smooth or finely striated, subcuticle with prominent and coarse striations. Conspicuous lateral, ventral and dorsal (absent in *L. hauruense*) body pores present, leading through canals into the hypodermis. Odontostyle dorylaimoid, odontophore simple, rod-like. Guiding ring single (double in *L. hauruense*). Oesophagus dorylaimoid. Cardia conoid, cardiac disc present. Female reproductive system mono-prodelphic or amphidelphic. Male with arcuate spicules and 14 low inconspicuous ventromedian supplements. Tails short, conoid to bluntly rounded, similar in both sexes.

Type species: Lordellonema hexaconae (Lordello, 1957) Andrassy, 1960

Other species: L. annulata Jairajpuri, 1966

L. parvum Thorne, 1974

L. porrectum (Heyns, 1963) Heyns, 1963

LORDELLONEMA PORRECTUM (HEYNS, 1963) HEYNS, 1963
(Fig. 18, A-C)

Dimensions:

Females (5): L = 0.55-0.59 mm; a = 22-25; b = 3.4-3.6; c = 26-27; V = 58-61; G_1 = 15-16; G_2 = 14-15; odontostyle = 13-14 um; odontophore = 12-13 um; oesophagus = 156-170 um; prerectum = 39-53 um; rectum = 12-13 um; tail = 21-23 um; ABD = 18-19um.

Habitat and locality: Soil around roots of wild bushes from J. N. U. campus, Delhi.

Remarks: Lordellonema porrectum is reported here for the first time from India. The present specimens agree well with those described by Heyns (1963).

GENUS *PRONOMELLA* SIDDIQI, 1969

Siddiqi (1969) proposed the genus *Pronomella* for *P. porifer* (Loof, 1964) as type species. The genus differs from *Aordellonema* in having ventral body pores limited to anterior region only, odontostyle with wide aperture and lumen, vulva pore-like and tail elongate-conoid. Siddiqi (1969) described one more species, *P. amini* from Sudan. This genus is being reported here for the first time from India.

Diagnosis: Body slender, moderate sized 0.9-1.7 mm long. Cuticle finely striated. Subcuticle loose with coarse transverse striations. Body pores distinct, ventral pores limited to anterior region only, dorsal pores one or two, and lateral pores on entire body. Lip region set off by constriction. Amphids cup-shaped with slit-like apertures. Odontostyle with wide lumen and aperture. Guiding ring single. Odontophore simple, rod-like. Oesophagus dorylaimoid, basal expanded portion less than half of total oesophageal length. Female reproductive system amphidelphic. Vulva pore-like. Tail elongate-conoid, distal end tending to curve dorsally. Males not known.

Type species: *Pronomella porifer* (Loof, 1964) Siddiqi, 1969

Other species: *P. amini* Siddiqi, 1969

PARATYLENCHUS KIRJAVA (LOOF, 1964) SIDDIQI, 1969
(Fig. 18, D-F)

Dimensions:

Aligarh population:

Females (5): L = 1.11-1.24 mm; a = 38-41; b = 3.9-4.2; c = 14-16; V = 52-54; G_1 = 8-11; G_2 = 9-12; odontostyle = 16-17 um; odontophore = 16-17 um; oesophagus = 260-290 um; prerectum = 35-39 um; rectum = 26-32 um; tail = 72-80 um; ABD = 20-22 um.

Kumaun population:

Females (5): L = 1.01-1.06 mm; a = 37-38; b = 3.7-3.8; c = 13-14; V = 54-55; G_1 = 6-7; G_2 = 7-8; odontostyle = 14-15 um; odontophore = 15-16 um; oesophagus = 269-281 um; prerectum = 30-33 um; rectum = 21-22 um; tail = 73-75 um; ABD = 17-18 um.

Habitats and localities: Soil around roots of (i) wild bushes from University Campus, Aligarh Muslim University, Aligarh, (ii) Litchi, Litchi chinensis L., from Pilibhit, Uttar Pradesh.

Remarks: The present specimens conform well with those described by Loof (1964).

FAMILY APORCELAIMIDAE HEYNS, 1965

Diagnosis: Moderate to large sized nematodes. Cuticle thick, smooth or finely transversely striated, often with criss-cross lines or punctations. Lip region continuous or offset by a deep constriction. Odontostyle either axial with a wide aperture or a mural tooth. Guiding ring single. Oesophagus highly muscular. Cardiac disc usually present. Female reproductive system amphidelphic. Males with dorylaimoid spicules, lateral guiding pieces and spaced ventromedian supplements. Tail short, conoid in both sexes.

Type subfamily: Aporcelaiminae Heyns, 1965 (Siddiqi, 1969)

Other subfamily: Sectonematinae Siddiqi, 1969

SUBFAMILY APORCELAIMINAE HEYNS, 1965 (SIDDIQI, 1969)

Diagnosis: Cuticle thick, smooth or finely transversely striated, often with criss-cross lines or punctations. Lip region continuous or offset by a deep constriction. Odontostyle dorylaimoid with wide lumen and aperture. Guiding ring single. Odontophore simple, rod-like. Oesophagus highly muscularized, oesophageal expansion gradual. Dorsal oesophageal gland nucleus usually far from it orifice. Cardia usually with a disc. Female reproductive system amphidelphic. Vulva transverse or

longitudinal. Males with dorylaimoid spicules, lateral guiding pieces and spaced ventromedian supplements. Tail short, conoid, similar in both sexes.

Type genus: Aporcelaimus Thorne & Swanger, 1936

Other genera: Akrotonus Thorne, 1974
Aporcelaimellus Heyns, 1965
Aporcelaimium Loof & Coomans, 1970
Mekatinus Heyns, 1965
Paraonchium Krall, 1958
Thonus Thorne, 1974

KEY TO SUBFAMILIES AND GENERA OF APORCELAIMIDAE

1. Odontostyle axial with wide aperture 2
Odontostyle a mural tooth ..... Sectonematinae, Sectonema

2. Layering of cuticle inconspicuous without criss-cross lines or punctations 3
Layering of cuticle conspicuous with criss-cross lines or punctations 5

3. Odontostyle asymmetrical ..... Paraonchium
Odontostyle symmetrical 4

4. Body long; cardiac disc absent ..... Aporcelaimium
Body smaller; cardiac disc present ..... Thonus

5. Lip region offset by slight depression; vulva longitudinal ..... Makatimus

Lip region offset by deep constriction; vulva transverse or pore-like 6

6. Lip region rounded; papillae not projecting from its contour, ventromedian supplements only two ..... Akrotamus

Lip region angular; papillae well developed projecting from its contour, ventromedian supplements more 7

7. Body long, slender; cuticle with criss-cross lines ..... Anorcelaimus

Body relatively short, robust; cuticle with transverse striae ..... Anorcelaimelius

Genus *Aporcelaimellus* Heyns, 1965

Heyns (1965) established the genus *Aporcelaimellus* to accommodate those species of the genera *Aporcelaimus* Thorne & Swanger, 1936 and *Eudorylaimus* Andrassy, 1959 which possess a medium sized and rather robust body, cuticle with fine but distinct transverse striations, axial spear with large aperture, amphids with or without a median support, chamber apparently never divided into two halves, cardiac disc absent and vulva with a pore-like opening. Heyns (1965) also pointed out that some of the species of *Eudorylaimus* should be transferred to *Aporcelaimellus*. Altherr (1967), Yeates (1967), Dagri & Jairajpuri (1968), Tjepkema, Ferris & Ferris (1971), Dagri & Coomans (1973), Thorne (1974), Dagri & Khera (1975) added species to this genus. Tjepkema *et al.*, (1971) revised the genus *Aporcelaimellus*, described four new species and also amended the diagnosis of the genus. They pointed out that the absence of cardiac disc and presence of a pore-like vulva are not constant characters of the genus. Dagri & Khera (1975) pointed out that the cardiac disc is usually present and amphidial chamber is usually divided into two halves. They also pointed out the importance of the location of oesophageal gland nuclei in differentiating *Aporcelaimellus* with *Eudorylaimus* and transferred twelve species from *Eudorylaimus* to *Aporcelaimellus*.

Bagri & Jairajpuri (1968) for the first time described two new species, *A. heynsi* and *A. indicus* from India. Bagri & Khera (1975) added two more species *A. chauhani* and *A. sroomensi*. In the present work, specimens of *Aporcelaimellus* were found in soil samples collected from different localities in India. Upon detailed study they were found to represent three known and a new species of this genus. The male of *A. sayleorsus* (Thorne & Swanger, 1936) Heyns, 1965 is being reported for the first time.

Diagnosis: Moderate sized nematodes, usually with robust body. Cuticle thickened mostly towards extremities, finely striated. Body pores usually distinct. Lip region set off by a deep constriction, lips angular, separated from one another. Oral aperture apparently hexagonal. Odontostyle doryleimoid with wide lumen and aperture, aperture less than half to more than half of its length. Amphids with or without median support, may be duplex. Cardiac disc may be present. Female reproductive system amphidelphic. Vulva transverse, slit or pore-like. Males with doryleimoid spicules, lateral guiding pieces and non-contiguous ventromedian supplements. Tails relatively short, bluntly-rounded, conoid or slightly digitate, similar in both sexes.

Type species: *Aporcelaimellus obscurus* (Thorne & Swanger, 1936) Heyns, 1965

Other species: *A. asperus* Tjepkema et al., 1971

A. bagrii n. sp.

A. aylocranus (Thorne & Swanger, 1936)
Heyns, 1965

A. capitatus (Thorne & Swanger, 1936)
Heyns, 1965

A. chauhani Baqri & Khera, 1975

A. clavus Thorne, 1974

A. cruciclus Thorne, 1974

A. cucumai Baqri & Khera, 1975

A. duboni (Altherr, 1963) Baqri & Khera, 1975

A. efficiens (Cobb in Thorne & Swanger, 1936)
Baqri & Khera, 1975

A. gerlachi (Meyl, 1956) Heyns, 1965

A. haynai Baqri & Jairajpuri, 1968

A. hylenbilus Tjepkema et al., 1971

A. indicus Baqri & Jairajpuri, 1968

A. insignis (Loos, 1945) Baqri & Khera, 1975

A. invisus Tjepkema et al., 1971

A. kikeonensis Baqri & Coomans, 1973

A. krynaui (Ditlevsen, 1928) Heyns, 1965

A. laevis Tjepkema et al., 1971

A. mamillatus (Williams, 1959) Heyns, 1965

A. nivalis (Altherr, 1952) Heyns, 1965

A. obscuroides Altherr, 1967

A. paraconicaudatus (Meyl, 1956) Heyns, 1965

A. parvus Thorne, 1974

A. papillatus (Bastian, 1865) Bagri & Khera, 1975

A. plasmis Thorne, 1974

A. ramosus Thorne, 1974

A. reproductus (Thorne & Swanger, 1936) Bagri & Khera, 1975

A. rivalis (Thorne, 1939) Bagri & Khera, 1975

A. quiatus (Kirjanova, 1951) Bagri & Khera, 1975

A. samarcandicus (Tulaganov, 1949) Bagri & Khera, 1975

A. sainhorati (Meyl, 1959) Heyns, 1965

A. sublabiatus (Thorne & Swanger, 1936) Heyns, 1965

A. submissus (Kirjanova, 1951) Bagri & Khera, 1975

A. subsimilis (Cobb, 1893) Bagri & Khera, 1975

A. taylori Yeates, 1967

A. vandorlaani (Meyl, 1956) Heyns, 1965

A. vitrinus (Thorne & Swanger, 1936) Bagri & Khera, 1975

A. warriari (Jairajpuri, 1965) Siddiqi, 1969

A. williamsi Heyns, 1965

APHELENCHUS OBSCURUS (THORNE & SWANGER, 1936) HEYNS, 1965

Dimensions:

Females (5): L = 2.63-2.87 mm; a = 28-35; b = 3.8-4.1; c = 61-67; V = 51-57; c_1 = 11-13; c_2 = 11-17; odontostyle =

24-26 um; odontophore = 42-46 um; oesophagus = 657-684 um; prerectum = 120-139 um; rectum = 57-60 um; tail = 42-45 um; ABD = 48-53 um.

Habitat and locality: Soil around roots of wheat, Triticum vulgare L., from Mussoorie, district Dehradun, Uttar Pradesh.

Remarks: This species is reported here for the first time from India, and the present specimens fit well with those described by Thorne & Swanger (1936) and Thorne (1974).

ANDRELAIMELLUS LAEVIS TJEPKEMA, FERRIS & FERRIS, 1971

Dimensions:

Females (5): L = 1.41-1.56 mm; a = 34-36; b = 3.8-4.0; c = 54-61; V = 58-60; G_1 = 10-13; G_2 = 9-11; odontostyle = 15-17 um; odontophore = 24-26 um; oesophagus = 370-392 um; prerectum = 87-108 um; rectum = 30-33um; tail = 24-26 um; ABD = 26-30 um.

Habitat and locality: Soil around roots of grasses from Gontinegar, district Lucknow, Uttar Pradesh.

Remarks: Tjepkema et al., (1971) described this species from Indiana, U.S.A. It is reported here for the first time from India. The present specimens agree fairly well with description

and dimensions of species as given by Tjepkema et al.(1971), except that these have slightly shorter odontostyle and odontophore (odontostyle = 18 um; odontophore = 30 um in type specimens).

ANCHONCHOLAIMELLUS ANYCTERUS (THORNE & SWANGER, 1936) HEYNS, 1965
(Fig. 19, A-C)

Dimensions:

Female (5): L = 1.97-2.16 mm; a = 31-36; b = 3.7-3.8; c = 64-68; V = 54-56; c_1 = 8-11; c_2 = 8-9; odontostyle = 22-23 um; odontophore = 33-37 um; oesophagus = 529-559 um; prerectum = 105-120 um; rectum = 42-54 um; tail = 31-34 um; ABD = 37-40 um.

Male: L = 1.86 mm; a = 34; b = 3.6; c = 50; T = 47; odontostyle = 23 um; odontophore = 34 um; oesophagus = 511 um; spicules = 66 um; lateral guiding pieces = 16 um; ventromedian supplements = 8; prerectum = 127 um; tail = 32 um; ABD = 38 um.

Description:

Female: Body ventrally arcuate upon fixation, slightly tapering towards anterior end. Cuticle finely striated. Body pores irregularly arranged along the dorsal and ventral sides of lateral chords.

Lip region distinctly offset by a constriction, wider than the adjoining body, 18 um or about one-third of body-width

at base of oesophagus. Amphids stirrup-shaped, duplex, their apertures occupying 9-10 um or about half of the lip-width. Odontostyle about 1.3 lip-width long, its aperture 11 um or about 48% of odontostyle length. Guiding ring irregular in outline, 10-12 um or slightly more than half lip-width from anterior end. Odontophore 1.4-1.7 times the odontostyle length. Nerve ring at 170-180 um from anterior end of body. Basal expanded portion of oesophagus occupies about 48-50% of total oesophageal length. Cardia tongue-shaped, cardiac disc present. Location of oesophageal gland nuclei and their orifices as given in Table - I.

Reproductive system amphidelphic. Vulva a transverse slit, vagina 24-26 um or less than half of the corresponding body-width. Prerectum about three anal body-widths long. Rectum 1.2-1.3 anal body-width long. Tail short, conoid, less than one anal body-width long. Caudal pores indistinct.

Male: Supplements an adanal pair and eight irregularly spaced ventromedians. Spicules slightly arcuate, 1.7 anal body-widths long. Prerectum about three anal body-widths long. Tail short conoid, less than one anal body-width long. Caudal pores indistinct.

Habitat and locality: Soil around roots of apricot, Prunus armeniaca from Marry field Estate, district Simla, Himachal Pradesh.

Remarks: This is the first record of the species from India and also the first ever report of its male. Females of the present population are similar to those described by Thorne & Swanger (1936), except that these have a longer odontostyle (odontostyle = 20 um in type specimens).

MORCELLINEMUS BAIRII N. SP.
(Fig. 20)

Dimensions:

Paratype females (10): L = 1.82-2.05 mm; a = 28-32; b = 3.4-3.8; c = 63-67; V = 53-57; C_1 = 7-8; C_2 = 8-9; odontostyle = 24-26 um; odontophore = 38-41 um; oesophagus = 507-544 um; prerectum = 45-57 um; rectum = 41-45 um; tail = 27-30 um; ABD = 32-36 um.

Holotype female: L = 1.91 mm; a = 31; b = 3.7; c = 68; V = 55; C_1 = 8; C_2 = 9; odontostyle = 24 um; odontophore = 38 um; oesophagus = 516 um; prerectum = 65 um; rectum = 42 um; tail = 28 um; ABD = 35 um.

Paratype male: L = 1.86 mm; a = 29; b = 3.4; c = 58; T = 45; odontostyle = 24 um; odontophore = 39 um; oesophagus = 540 um; spicules = 63 um; lateral guiding pieces = 16 um; ventromedian supplements = 12; prerectum = 65um; tail = 32 um; ABD = 38 um.

Description:

Female: Body slightly ventrally arcuate upon fixation, slightly tapering anterior to base of oesophagus. Cuticle finely striated, its thickness 3-5 um at midbody and 6-8 um at tail. Lateral chords one-seventh to one-sixth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region distinctly offset by a constriction, wider than adjoining body, 18-19 um or about one-third of body-width at base of oesophagus. Amphids stirrup-shaped, duplex, their apertures 10-11 um or about half of the corresponding body-width. Odontostyle 1.2-1.4 lip-width long, its aperture 9-11 um or 40-41% of its length. Guiding Ring at 9-11 um or about half lip-width from anterior end. Odontophore 1.5-1.7 times the odontostyle length. Nerve ring at 161-167 um from anterior end of body. Basal expanded portion of oesophagus occupies 49-55% of oesophageal length. Cardia conoid, 19-20 um long. Location of oesophageal gland nuclei and their orifices as given in Table - I.

Reproductive system amphidelphic. Vulva a transverse slit, vagina 17-19 um or about one-third of corresponding body-width, sclerotised distally. Prerectum 1-2 anal body-width long. Rectum about one anal body-width long. Tail short hemispheroid, 0.8-0.9 anal body-width long with one to two caudal pores on each side.

Male: Supplements an adanal pair and 12 irregularly spaced ventromedians. Spicules about 1.6 anal body-widths long, lateral guiding pieces about one-fourth of spicules length. Prerectum about two anal body-widths long. Tail short, conoid about 0.8 anal body-width long with two caudal pores on each side.

Type habitat and locality: Soil around roots of ferns and mosses from Ramgarh, district Nainital, Uttar Pradesh.

Type specimens: Collected in May 1977; holotype female on slide Aporcelaimellus baqrii n. sp./1; paratype females and males on slides Aporcelaimellus baqrii n. sp./2-5.

Differential diagnosis: Aporcelaimellus baqrii n. sp. comes close to A. salmus Thorne, 1974; A. conoidus Thorne, 1974; and A. hylophilus Tjepkema et al., 1971. From A. salmus it differs in having shorter body, longer odontostyle, posteriorly located vulva, in the shape and size of tail and in the number of ventromedian supplements (L = 2.3 mm; c = 58; V = 50; odontostyle = 18 um; ventromedian supplements = 10; tail uniformly conoid in A. salmus). From A. conoidus it differs in the shape of lip region and amphids, smaller odontostyle aperture and in the shape and size of tail (odontostyle aperture 50%, c = 50; tail bluntly conoid in A. conoidus). From A. hylophilus it differs in having differently shaped lip

region and amphids, smaller odontostyle aperture and in the shape and size of tail (odontostyle aperture 52%; c = 41-51; tail dorsally-convex with or without concavity on dorsal side just anterior to tip in *A. hylochilus*).

Named after Dr. Qaiser H. Baqri, Nematologist-in-Charge at the Zoological Survey of India, Calcutta, who has done extensive work on dorylaim nematodes.

FAMILY DISCOLAIMIDAE GERLACH, 1969

Diagnosis: Cuticle finely striated, lateral chords with glandular bodies. Lip region discoidal, lips separated, rarely with inner bowl-shaped sclerotized lining which may bear rudimentary ridges. Odontostyle slender, thick-walled, sometimes slightly non-axial. Guiding ring single. Odontophore rod-like. Basal expanded part of oesophagus very muscular, marked off from the anterior slender part by a sudden expansion, rarely enveloped in a sheath. Female reproductive system monoopisthodelphic. Males with large coryloidoid spicules, lateral guiding pieces and a series of spaced ventromedian supplements. Tails conoid or hemisphaeroid, similar in both sexes.

Type genus: Discolaimus Cobb, 1913

Other genera: Discolaimium Thorne, 1939
Discolaimoides Heyns, 1963
Mylodiscus Thorne, 1939

KEY TO THE GENERA OF DISCOLAIMIDAE

1. Lip region provided with cuticularized, shallow, bowl-like plates ..... Mylodiscus
Lip region not provided with cuticularized plates 2

2. Lip region discoid ..... Discolaimus
Lip region not discoid 3

3. Lip region offset by expansion ..... Blennioides

Lip region offset by constriction ..... Blennium

Genus *Discolaimus* Cobb, 1913

Cobb (1913) proposed the genus *Discolaimus* with *D. tenuatus* as its type. Micoletzky (1922) considered *Discolaimus* as a subgenus under *Dorylaimus* Dujardin, 1845. Later, Thorne (1939) gave a detailed account of *Discolaimus* and added some species under it. Thorne & Swanger (1936), Tulaganov (1949), Korsheevskaya (1951), Lordello (1955), Heyns (1963), Siddiqi (1964), Monteiro (1970) etc., added more species to this genus although some of these species have now been shifted to *Labronema* Thorne, 1939 and *Discolaimoides* Heyns, 1963. In the present work male of *D. tenax* has been reported for the first time.

Diagnosis: Body usually 1-3 mm long. Cuticle finely striated, lateral chords with well developed glandular bodies. Lip region discoidal, lips widely expanded. Odontostyle slender, thick-walled with aperture about one-third of its length. Guiding ring single. Odontophore rod-like. Basal expanded part of oesophagus marked off from the anterior slender part by a sudden expansion. Cardia disc-like followed by bluntly conoid valvular portion. Female reproductive system mono-opisthodelphic or amphidelphic. Males with large dorylaimoid spicules, lateral guiding pieces and a series of spaced ventromedian supplements. Tails bluntly rounded or conoid, with obtuse terminus, similar in both sexes.

Type species: Diaccialaimus tenuis Cobb, 1913

Other species: D. alkarensicus Marsheevskaya, 1955

D. auritus Cordello, 1955

D. brevis Siddiqi, 1964

D. diaccocheilus Gulyanov, 1949

D. major Thorne, 1939

D. monhystera Thorne, 1939

D. monoplanus Heyns, 1963

D. neoplanus Siddiqi, 1964

D. nimai Monteiro, 1970

D. similis Thorne, 1939

D. tenax Siddiqi, 1964

DIACCIALAIMUS TENAX SIDDIQI, 1964
(Fig. 19, D-F)

Dimensions:

Females (3): L = 1.13-1.23 mm; a = 35-39; b = 3.8-3.9; c = 43-44; V = 52-54; G_1 = 15-17; G_2 = 16-18; odontostyle = 14-15 um; odontophore = 23-25 um; oesophagus = 294-324 um; prerectum = 15-16 um; rectum = 15-16 um; tail = 26-28 um; ABD = 18-20 um.

Male: L = 1.18 mm; a = 37; b = 3.8; c = 44; V = 52; odontostyle = 14 um; odontophore = 25 um; oesophagus = 309 um; spicules = 33 um; lateral guiding pieces = 6 um; ventromedian

supplements = 10; prerectum = 18 um; tail = 27 um; ABD = 22 um.

Discription:

Female: Body slightly ventrally curved upon fixation. Cuticle finely striated. Lateral chords about one-third of body-width at midbody. Lateral body pores leading to glandular bodies in hypodermis.

Lip region discoidal, offset by a deep constriction, 16-17 um or about half of the body-width at base of oesophagus. Lips with distinct papillae; liplets six, surrounding stoma. Amphids stirrup-shaped, their apertures 6-7 um wide. Odontostyle slightly smaller than lip-width, its aperture about one-third of its length. Guiding ring single. Odontophore rod-like, 1.5-1.7 times the odontostyle length. Nerve ring at 96-98 um from anterior end of body. Basal expanded portion of oesophagus occupying about 53-54% of oesophageal length. Cardia conoid, projecting into the anterior part of intestine. Location of oesophageal gland nuclei and their orifices as given in Table - I.

Reproductive system amphidelphic. Vulva a transverse slit. Prerectum less than one anal body-width long. Rectum about as long as prerectum. Tail short, conoid, about 1.4 anal body-width long with a subdigitate terminus.

Male: Supplements an adanal pair and ten irregularly spaced ventromedians. Spicules about 1.5 anal body-widths long.

Lateral guiding pieces simple, rod-like about one-fifth of spicules length. Prerectum about 0.7 anal body-width long. Tail conoid, about 1.2 anal body-width long with subdigitate terminus.

Habitat and locality: Soil around roots of grasses, Cynodon sp. from district Kanpur, Uttar Pradesh.

Remarks: Discolaimus tenax was described by Siddiqi (1964) based on females only. The male is being reported here for the first time. The females of the present population are similar to those described by Siddiqi (1964).

SUPERFAMILY BELONDIROIDEA THORNE, 1939 (THORNE, 1964)

Diagnosis: Lip region narrow, pointed; lips angular or rounded. Amphidial aperture usually about as wide as lip-width. Odontostyle small, usually less than one lip-width long. Odontophore simple rod-like or flanged. Basal expanded part of oesophagus surrounded by a sheath of spiral or straight muscles. Female reproductive system usually mono-opisthodelphic, may be amphidelphic. Males with dorylaimoid spicules and lateral guiding pieces. Supplements an adanal pair and few to many ventromedians. Tails similar in both sexes, bluntly rounded to filiform except Roqueinae in which female tail is long filiform and male tail is short rounded.

Type family: Belondiridae Thorne, 1939

Other families: Dorylaimellidae Jairajpuri, 1964 (Thorne, 1964)
Axonchiidae Jairajpuri, 1964 (Siddiqi, 1968)

KEY TO THE FAMILIES OF BELONDIROIDEA

1. Cuticularized pieces present around oral aperture; odontophore flanged ..... Dorylaimellidae, Dorylaimellus
Cuticularized pieces absent around oral aperture; odontophore rod-like 2

2. Tails short digitate, conoid or rounded ..... Belondiridae
Tails long filiform (except males of Roqueinae) .....
..... Axonchiidae

FAMILY BELONDIRIDAE THORNE, 1939

Diagnosis: Lip region narrow, continuous or set off from the body. Odontostyle small, linear, spindle-shaped fusiform or asymmetrical with narrow or wide lumen. Odontophore simple rod-like. Anterior slender and posterior expanded part of oesophagus continuous or may be separated by a distinct isthmus like-structure. Basal expanded part of oesophagus greatly variable in size and musculature, surrounded by a thick sheath of spiral or straight muscles. Cardia simple, conoid or rounded. Female reproductive system usually mono-opisthodelphic, rarely amphidelphic. Males with well developed spicules, lateral guiding pieces and few to many ventromedian supplements. Tails short hemispherical or elongate-conoid or clavate, similar in both sexes.

Type genus: Belondira Thorne, 1939

Other genera: Amphidelus Cobb, 1920

Anchobelondira Bair & Coomans, 1971

Belondirella Thorne, 1964

Dactylurexonchium Coomans & Bair , 1975

Heynsexonchium Coomans & Bair, 1975

Challexonchium Jairajpuri & Khanachand, 1979

KEY TO THE GENERA OF BELONDIRIDAE
(Modified after Jairajpuri & Ahmad, 1980)

1. Female reproductive system amphidelphic 2
   Female reproductive system mono-opisthodelphic 3

2. Anterior portion of oesophagus set off by constriction ...
   ..... Anchobelondira
   Anterior portion of oesophagus not set off by constriction
   .....Belondiralia

3. Anterior portion of oesophagus set off by constriction or isthmus-like portion 4
   Anterior portion of oesophagus not set off.....Belondira

4. Tail terminus digitate ..... Dactylurenchium
   Tail terminus hemispherical 5

5. Spicules long, narrow, alate, without median pieces .....
   ..... Thallenchium
   Spicules massive, non-alate with median pieces 6

6. Odontostyle narrow, more than two lip-widths long .....
   ..... Leptonenchium
   Odontostyle fusiform-cylindroid, less than two lip-widths long ..... Aporcelaimellus

GENUS *BELONDIRA* THORNE, 1939

Thorne (1939) proposed the genus *Belondira* with *B. spatica* as its type. Thorne (1939 & '64); Andrassy(1963 & '70); Siddiqi (1964, '66 & '68), Jairajpuri (1964), Coomans & Baqri (1972) and Suryawanshi (1972) have each published an account on the genus *Belondira* and also added new species. The genus at present comprises 23 species of which 14 are known to occur in India. In the present work males of *B. aecca* Thorne, 1964 are reported for the first time and a description is given below.

Diagnosis: Body 0.7-2.0 mm long, almost straight to slightly ventrally curved. Lip region rounded, papillae not elevated, outer part of cephalic framework weakly to moderately sclerotized. Amphidial apertures usually as wide as lip region. Odontostyle narrow, small, usually less than the width of lip region. Guiding ring obscure. Odontophore rod-like. Anterior slender part of oesophagus expands below ellipsoidal swelling and then gradually narrows until it forms basal expanded portion; the latter surrounded by a thick sheath of usually dextral, rarely sinistral muscle bands. Cardia conoid or rounded. Female reproductive system mono-opisthodelphic. Anterior sexual branch rudimentary, sac-like; posterior sexual branch normal. Males with well developed spicules, lateral guiding pieces and 1-2 widely spaced ventromedian supplements. Tails bluntly rounded

to clavate, usually with thickened cuticle, similar in both sexes.

Type species: *Baldnera aptica* Thorne, 1939

Other species: *B. bulbosa* Siddiqi, 1966

B. caudata Thorne, 1939

B. clava Thorne, 1939

B. clavicaudata (Williams, 1958) Andrássy, 1963

B. cylindrica Thorne, 1964

B. coldeni Suryawanshi, 1972

B. decmi Andrássy, 1970

B. gurtasai Siddiqi, 1968

B. hapalocaia Siddiqi, 1964

B. hexartha Siddiqi, 1964

B. ortha Thorne, 1939

B. paraclava Jairajpuri, 1964

B. parva Thorne, 1964

B. porta Thorne, 1964

B. rafiqi Suryawanshi, 1972

B. secca Thorne, 1964

B. sharmai Suryawanshi, 1972

B. syedi Suryawanshi, 1972

B. tenuidens Thorne, 1964

B. thornei Suryawanshi, 1972

B. tunicauda Coomans & Baqri, 1972

B. ujjainica Siddiqi, 1966

[illegible] THORNE, 1964
(Fig. 21)

Dimensions:

Females (5): L = 1.02-1.14 mm; a = 38-42; b = 4.3-5.2; c = 32-41; V = 37-38; G_1 = 3-4; G_2 = 12-20; odontostyle = 5-6 um; odontophore = 10-11 um; oesophagus = 200-239 um; prerectum = 98-122 um; rectum = 23-27 um; tail = 26-35 um; ABD = 21-23 um.

Males (5): L = 1.02-1.09 mm; a = 41-44; b = 4.6-5.2; c = 31-38; T = 32-42; odontostyle = 5-6 um; odontophore = 10-11 um; oesophagus = 207-225 um; spicules = 29-31 um; lateral guiding pieces = 5-6 um; ventromedian supplements = 1; prerectum = 124-130 um; tail = 28-33 um; ABD = 20-23 um.

Description:

Female: Body almost straight or slightly ventrally curved upon fixation, tapering gradually anterior to base of oesophagus. Cuticle 2 um thick at midbody and 4-5 um at tail; inner layer finely striated. Lateral chords about one-third of body-width at midbody.

Lip region continuous with the body contour, rounded. Lips amalgamated. Amphids stirrup-shaped, their apertures occupying about two-thirds of the corresponding body-width. Odontostyle about one lip-width long. Guiding ring obscure. Odontophore rod-like about twice the odontostyle length. Nerve ring at 77-89 um from anterior end. Basal expanded portion of oesophagus occupying about

39-46% of total oesophageal length, surrounded by a thick sheath of spiral muscles. Location of oesophageal gland nuclei and their orifices as given in Table - I.

Reproductive system mono-opisthodelphic. Vulva transverse, vagina about half vulval body-width long. Anterior uterine sac 30-42 um or 1.2-1.5 times the vulval body-width. Posterior gonad normal. Prerectum 4-6 anal body-widths long. Rectum 1.1-1.3 anal body-width long. A well developed post-rectal sac present, 33-34 um or 1.5 anal body-widths long. Tail short, hemisphoroid, 1.2-1.5 anal body-widths long with two caudal pores on each side.

Male: Supplements an adanal pair and a single ventromedian within the range of spicules. Spicules slightly curved 1.3-1.5 anal body-widths long. Lateral guiding pieces simple, tongue-shaped, about one-fifth of spicule length. Prerectum 6-7 anal body-widths long. Tail hemispherical, about 1.5 anal body-widths long.

Habitat and locality: Soil around roots of goldmohur, Caesalpinia pulcherrima L., from Rajendra park, Bhuj, district Kutch, Gujarat state.

Remarks: The present specimens of H. sacca conform well with those described by Thorne (1964) except for having slightly longer body, and anterior location of vulva. The males are being reported for the first time.

GENUS *ANCHICHIUM* COBB, 1920

Cobb (1920) proposed the genus *Anonchium* with *A. amplicolle* as its type. Thorne (1939), Altherr (1953), Williams (1958), Jairajpuri (1964), Siddiqi (1964 & '66), Hechler (1969), Ali *et al.* (1974), Nair (1973 & '75), Coomans & Nair (1975), Nair & Coomans (1971, '73 & '74), Bagri & Khera (1976), Yeates (1979) added a number of species to this genus. Coomans & Nair (1975) split the genus *Anonchium* into nine subgenera. Jairajpuri & Dhanachand (1979) raised two of these subgenera, *Dactylurenonchium* and *Hexanonchium* to full generic ranks.

During the present work specimens of *Anonchium* were found in the soil samples collected from different localities in India. Upon detailed study these were found to represent two known and three new species. The males of *A.* (*A.*) *ahsimi* Bagri & Khera, 1976 and *A.* (*A.*) *vacinatum* Jairajpuri, 1965 have been reported for the first time. One new species each, belonging to the subgenera *Anonchium*, *Tetranonchium* and *Eranonchium* is being described hereunder.

Diagnosis: Small to large sized (0.9–4.3 mm) nematodes. Body almost straight to C-shaped upon fixation. Lip region continuous or set off with amalgamated or high, conoid to rounded lips. Labial papillae usually elevated. Amphidial apertures about two thirds to about as wide as lip-base. Odontostyle small, fusiform.

Guiding ring single or 'double'. Odontophore rod-like with thickened walls, usually equal to odontostyle length. Anterior portion of oesophagus usually with weak musculature. A spindle shaped enlarge region may occur just infront of nerve ring. Anterior slender part of oesophagus separated by an isthmus like portion. Basal expanded part of oesophagus usually very long, surrounded by weakly to strongly developed sheath of spiral or straight muscles. Dorsal oesophageal gland nucleus conspicuous. Female reproductive system mono-opisthodelphic. Vulva transverse, rarely longitudinal, oval. Vagina usually wide and with longitudinally striated walls, may be distally sclerotised. Anterior uterine sac small to moderately long or completely absent. Males with well developed massive, straight to ventrally arcuate spicules. Lateral guiding pieces sclerotised, rod-like with distal bifid ends. Supplements an adanal pair and 2-30 ventromedians which may be contiguous or spaced. Tail hemispherical to conoid, similar in both sexes.

Type subgenus: Axonchium (Cobb, 1920) Coomans & Nair, 1975

Other subgenera: Diaxonchium Coomans & Nair, 1975

Ayaxonchium Coomans & Nair, 1975

Hypaxonchium Coomans & Nair, 1975

Intraxonchium Coomans & Nair, 1975

Paraxonchium Coomans & Nair, 1975

Synchaiaxonchium Coomans & Nair, 1975

SUBGENUS ANONCHIUM (COBB, 1920) COOMANS & NAIR, 1975

Diagnosis: small to medium-sized, 1.1-2.9 mm long. Lip region offset, lips conoid with inner portions slightly to prominently demarcated. Odontostyle fusiform. Anterior oesophagus quite to very muscular, both parts of oesophagus either abutting each other or separated by a short isthmus-like portion. Anterior genital branch of female a small or moderately long uterine sac. Vulva a transverse slit. Vagina without sclerotization. Males with massive spicules, bifid lateral guiding pieces and spaced ventromedian supplements. Tails hemispheroid, convex conoid to short cylindroid, similar in both sexes.

Type species: Anonchium (Anonchium) amulicolle Cobb, 1920

Other species: A. (A.) bulbosum Williams, 1958

A. (A.) circulatum Nair, 1973

A. (A.) elegans Jairajpuri, 1964

A. (A.) hexasi Nair, 1973

A. (A.) latecaudatum Nair, 1973

A. (A.) mamaliense Ali, Jairajpuri & Coomans, 1975

A. (A.) metacobtusicaudatum
(S. Stekhoven & Teunissen, 1938)
Nair & Coomans, 1973

A. (A.) nitidum Jairajpuri, 1964

A. (A.) annulum (Yeates, 1967)
Coomans & Yeates, 1969

A. (A.) saccatum Jairajpuri, 1964

A. (A.) shamimi Begri & Khera, 1976

A. (A.) siddiqui Coomans & Hair, 1975

A. (A.) labiatum Thorne, 1939

A. (A.) tronskeiense Hair, 1973

A. (A.) vallum n. sp.

AXONCHIUM (AXONCHIUM) SHAMIMI BAQRI & KHERA, 1976
(Fig. 22)

Dimensions:

Females (7): L = 1.31-1.47 mm; a = 31-39; b = 2.2-2.6; c = 60-70; V = 54-58; G_1 = 8-11; G_2 = 13-19; odontostyle = 8-9 um; odontophore = 10-11 um; oesophagus = 547-597 um; prerectum = 151-212 um; rectum = 27-32 um; tail = 21-23 um; ABD = 27-29 um.

Males (4): L = 1.35-1.55 mm; a = 32-38; b = 2.3-2.8; c = 21-22; T = 45-49; odontostyle = 8-9 um; odontophore = 11 um; oesophagus = 541-573 um; spicules = 36-39 um; lateral guiding pieces = 13-15 um; ventromedian supplements = 6-7; prerectum = 176-189 um; tail = 21-23 um; ABD = 28-29 um.

Description:

Female: Body ventrally curved upon fixation. Cuticle finely striated, 1-2 um thick at midbody and 7-8 um at tail.

Lateral chords about one-eighth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region offset by deep constriction, 8-9 um or about one-fifth of body-width at base of oesophagus. Amphids cup-shaped, their apertures 6-7 um or about three-fourth of lip-width wide. Odontostyle fusiform, about one lip-width long, its aperture about one-third of its length. Guiding ring at 7-8 um or about one lip-width from anterior end. Odontophore simple, rod-like, about 1.2 times the odontostyle length. Nerve ring encircling the anterior slender part of oesophagus at 112-119 um from anterior end. Two parts of oesophagus abutting each other, constriction very deep. Posterior expanded portion of oesophagus occupying about 61-73 % of total oesophageal length, enclosed in a muscle sheath of straight bundles. Cardia 9-12 um or about one-fourth of corresponding body-width long, tongue-shaped.

Vulva a transverse slit. The vaginal wall adjacent to vulva is not differentiated from the body cuticle, posterior half encircled by well developed sphincter. Vagina slightly bent posteriad about half of the corresponding body-width long. Anterior genital branch sac-like, 119-153 um or 2.8-3.6 vulval body-widths long. Posterior genital branch typical. Distinct sphincter present at oviduct-uterus junction. Prerectum 5-8 anal body-widths long. Rectum about one anal body-width long. Tail short, hemispherical, 0.7-0.8 anal body-width long with two caudal

pores on each side.

Male: Supplements an adanal pair and 6-7 ventromedians, arranged in two groups. Spicules 1.3-1.4 anal body-width long, ventrally arcuate. Lateral guiding pieces distinctly sclerotized with bifid ends. Prerectum 6-7 anal body-widths long. Tail short, hemispherical, 0.7-0.8 anal body-width long with two caudal pores on each side.

Habitat and locality: Soil around roots of Pinus sp. from Kapulkund, district Nilgris, Tamil Nadu.

Remarks: Amonchium (A.) ahamimi was described by Bagri & Khera (1976) from Andamans based on females only. The males are being reported here for the first time. The present material conforms well with the original.

AMONCHIUM (AMONCHIUM) VANDILI N. SP.
(Fig. 23)

Dimensions:

Paratype females (5): L = 1.59-1.95 mm; a = 36-41; b = 2.3-3.0; c = 57-68; V = 52-59; c_1 = 5-7; c_2 = 11-13; odontostyle = 11-12 um; odontophore = 13-14 um; oesophagus = 534-700 um; prerectum = 212-235 um; rectum = 30-47 um; tail = 25-29 um; ABD = 33-40 um.

Holotype female: L = 1.94 mm; a = 30; b = 2.9; c = 67; V = 53; G_1 = 7; G_2 = 15; odontostyle = 12 um; odontophore = 13 um; oesophagus = 560 um; prerectum = 231um; rectum = 39 um; tail = 29 um; ABD = 39 um.

Paratype males (4): L = 1.66-1.82 mm; a = 36-39; b = 2.5-3.0; c = 59-65; T = 46-49; odontostyle = 11-12 um; odontophore = 13-14 um; oesophagus = 595-655 um; spicules = 55-57 um; lateral guiding pieces = 14-16 um; ventromedian supplements = 2; prerectum = 293-310 um; tail = 28-29 um; ABD = 33-34 um.

Description:

Female: Body slightly ventrally curved upon fixation. Cuticle finely striated, 3-4 um thick at midbody and 8-11 um at tail. Lateral chords one-fifth to one-fourth of body-width at midbody, glandular organs distinct. Lateral, dorsal and ventral body pores indistinct.

Lip region offset by constriction, lips incompletely separated, 10-11 um or about one-fourth of body-width at base of oesophagus. Amphids cup-shaped, their apertures 7-8 um or about three-fourth of the lip-width wide. Odontostyle fusiform, about one lip-width long, its aperture about one-third of its length. Guiding ring at 10-11 um or about one lip-width from anterior end. Odontophore simple rod-like, slightly longer than the odontostyle.

Nerve ring encircles the anterior slender part of oesophagus at 131-147 um from anterior end. Constriction very deep and two parts of oesophagus abutting each other. Posterior expanded portion of oesophagus occupying about 62-73% of total oesophageal length, enclosed in a muscle sheath with straight bundles. Cardia 16-18 um or about one-third of corresponding body-widths long, tongue-shaped.

Vulva a transverse slit. The vaginal wall adjacent to vulva is not differentiated from body cuticle, posterior half encircled by well developed sphincter. Vagina bent posteriad, 25-28 um or about half of the vulval body-width long. Anterior sexual branch sac-like, 93-142 um or 2-3 vulval body-widths long. Posterior sexual branch normal. Distinct sphincter present at oviduct-uterus junction. Prerectum 6-7 anal body-widths long. Rectum about one anal body-width long. Tail short hemispherical, 0.7-0.8 anal body-width long with two caudal pores on each side.

Male: Supplements an adanal pair and two ventromedians, placed far from each other, in one specimen distal one is absent and in a single specimen three ventromedians are present. Spicules arcuate about 1.2 anal body-width long. Lateral guiding pieces distinctly sclerotized, slightly bent in the middle with distal bifid end. Prerectum 8-9 anal body-widths long. Tail short, hemispherical, 0.7-0.8 anal body-width long with two caudal pores on each side.

Type [illegible] and locality: Soil around roots of grasses and mosses from the Silent Valley, district Palaparum, Kerala state.

Type specimens: Collected in October 1980; holotype female and a paratype male on slide Aeonchium (A.) vallum n. sp./1; other paratype males and females on slides Aeonchium (A.) vallum n.sp./2-4;

Differential diagnosis: Aeonchium (A.) vallum n. sp. comes close to A. (A.) siddiqui Coomans & Nair, 1975 and A. (A.) shamimi Baqri & Khera, 1976 but differs from both in having a longer body and odontostyle. It can be further differentiated from former in having longer odontophore, shorter vagina, longer spicules and in the shape of tail (L = 1.12-1.45 mm; odontostyle = 8-9 um; odontophore = 9.5-10.5um; spicules = 32 um in A. (A.) siddiqui). From A. (A.) shamimi it can also be differentiated in the shape and size of spicules and in the number of ventromedian supplements (L = 1.35-1.58 mm; odontostyle = 8-9 um; spicules = 36-39 um; ventromedian supplements = 6-7 in A. (A.) shamimi).

SUBGENUS METAXONCHIUM COOMANS & NAIR, 1975

Diagnosis: Medium to large sized, 1.6-4.3 mm long. Cuticle with comparatively coarse transverse striations. Lip region offset, with conoid to rounded lips. Odontostyle fusiform. Anterior

oesophagus quite muscular, separated from posterior oesophagus by a short isthmus-like portion or both parts of oesophagus abutting each other. Anterior sexual branch of female moderately long to very long. Vulva transverse oval. Vagina weakly to heavily sclerotized, sclerotization not separated from the body cuticle by a disc-like structure. Males with massive spicules, bifid lateral guiding pieces and spaced ventromedian supplements. Tails bluntly rounded to convex conoid, similar in both sexes.

Type species: Axonchium (Metaxonchium) coronatum (De Man, 1906) Thorne & Swanger, 1936

Other species: A. (M.) leptocephalum Altherr, 1953

A. (M.) aciculum n. sp.

A. (M.) vaginatum Jairajpuri, 1965

AXONCHIUM (METAXONCHIUM) VAGINATUM JAIRAJPURI, 1965
(Fig. 24)

Dimensions:

Females (4): L = 2.21-2.79 mm; a = 37-42; b = 2.6-3.4; c = 77-89; V = 44-49; G_1 = 7-8; G_2 = 13-15; odontostyle = 13-14 um; odontophore = 14-16 um; oesophagus = 766-852 um; prerectum = 218-261 um; rectum = 36-51 um; tail = 27-36 um; ABD = 42-47 um.

Males (2): L = 2.36–2.41 mm; a = 45–46; b = 3.1; c = 83–87; T = 55–56; odontostyle = 12–13 um; odontophore = 15 um; oesophagus = 758–773 um; spicules = 59–60 um; lateral guiding pieces = 18–19 um; ventromedian supplements = 9; prorectum = 260–270 um; tail = 27–29 um; ABD = 39–42 um.

Description:

Females: Body ventrally curved upon fixation. Cuticle distinctly transversely striated, 3–4 um thick at midbody and 8–10 um at tail. Lateral chords about one-eighth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region offset by a constriction, 10–12 um or about one-fifth of body-width at the base of oesophagus. Amphids cup-shaped, their apertures 7–8 um or about as wide as lip base. Odontostyle about one lip-width long, its aperture about one-third of its length. Guiding ring at 10–11 um or about one lip-width from anterior end. Odontophore simple rod-like, slightly longer than odontostyle length. Nerve ring encircles the anterior slender part of oesophagus at 162–172 um from anterior end. Posterior expanded portion of oesophagus occupying about 64–71% of total oesophageal length, enclosed in a muscle sheath of straight bundles. Cardia cylindrical, 20–29 um or less than half of the corresponding body-width long.

Vulva transverse oval. The vaginal wall adjacent to vulva distinctly offset from the body cuticle and heavily sclerotised.

Anterior sexual branch sac-like, 129-210 um or 2.4-2.8 vulval body-widths long. Posterior sexual branch normal. Uterus-oviduct separated by a distinct sphincter. The uterus consisting a distal expansion, a very long and tubular 'Z' organ containing sclerotized apophyses, and a rather narrow proximal part. Prerectum 5-6 anal body-widths long. Rectum slightly more than one anal body-width long. Tail hemispheroid, 0.7-0.8 anal body-width long with two caudal pores on each side.

Male: Supplements an adanal pair and nine more or less regularly spaced ventromedians. Spicules arcuate about 1.5 anal body-widths long. Lateral guiding pieces distinctly sclerotized with distal bifid end. Prerectum 6-7 anal body-widths long. Tail almost cylindrical to conoid with a bluntly rounded terminus, 0.7-0.8 anal body-width long with two caudal pores on each side.

Habitat and locality: Soil around roots of wild plants from Mussoorie, district Dehradun, Uttar Pradesh.

Remarks: Aconchium (M.) vaginatum was described by Jairajpuri (1965) from Nainital, Uttar Pradesh, based on a single female. This species is redescribed here along with the first report of its males. The present females fit well with the description given by Jairajpuri (1965) and Nair & Coomans (1974).

[illegible] (Paralongidorus) [illegible] n. sp.
(Fig. 25)

Dimensions:

Paratype females (4): L = 1.65-1.88 mm; a = 42-47; b = 2.7-3.6; c = 67-72; V = 52-54; c_1 = 4-6; c_2 = 8-10; odontostyle = 9-10 um; odontophore = 13-14 um; oesophagus = 511-604 um; prerectum = 264-336 um; rectum = 26-32 um; tail = 24-28 um; ABD = 27-28 um.

Holotype female: L = 1.74 mm; a = 44; b = 3.2; c = 67; V = 53; c_1 = 5; c_2 = 8; odontostyle = 9 um; odontophore = 13 um; oesophagus = 538 um; prerectum = 336 um; rectum = 32 um; tail = 26 um; ABD = 28 um.

Paratype males (4): L = 1.69-1.78 mm; a = 46-48; b = 3.0-3.5; c = 65-71; T = 46-49; odontostyle = 9-10 um; odontophore = 13-14 um; oesophagus = 484-574 um; spicules = 39-42 um; lateral guiding pieces = 12 um; ventromedian supplements = 9; prerectum = 279-293 um; tail = 24-26 um; ABD = 29-30 um.

Description:

Female: Body ventrally curved upon fixation. Cuticle finely striated, 1-2 um thick at midbody and 6-7 um at tail. Lateral chords about one-eighth to one-seventh of body-width at midbody. Glandular organs conspicuous, 45-61 irregularly placed,

variable in size. Lateral, dorsal and ventral body pores indistinct.

Lip region offset by deep constriction, 11-12 um or about one-fourth of body-width at base of oesophagus. Amphids cup-shaped, their apertures 8-9 um or about as wide as lip base. Odontostyle 0.8-0.9 lip-width long, its aperture about one-third of its length. Guiding ring at 7-8 um or 0.6-0.7 lip-width from anterior end. Odontophore simple rod-like, about 1.4 times the odontostyle length. Nerve ring encircles the anterior slender part of oesophagus at 97-127 um from anterior end. Two parts of oesophagus abutting each other. Posterior expanded portion of oesophagus occupying about 55-75% of total oesophageal length, enclosed in a muscle sheath with straight bundles. Cardia 12-13 um or about one-third of the corresponding body-width long.

Vulva transverse oval. Vagina thick-walled with well developed cuticularised pieces, 15-16 um or less than half of the corresponding body-width. Anterior sexual branch sac-like, 73-111 um or 2-3 vulval body-widths long. Posterior sexual branch typical, sphincter present at oviduct-uterus junction. Prerectum 9-12 anal body-widths long. Rectum about one anal body-width long. Tail short, bluntly conoid, slightly less than one anal body-width long with one or two caudal pores on each side.

Male: Supplements an ocanal pair and nine, low ventromedians, forming two groups. Spicules 1.3-1.4 anal body-width long. Lateral guiding pieces about one-third of spicules length. Prorectum 10-12 anal body-widths long. Tail short, bluntly conoid, slightly less than one anal body-width long with two caudal pores on each side.

Type habitat and locality: Soil around roots of wild tree from Ulsoor, District Bangalore, Karnataka state.

Type specimens: Collected in September 1980; holotype female and paratype male on slide Axonchium (M.) spiculum n. sp./1; other paratype males and females on slides Axonchium (M.) spiculum n.sp./2-3;

Differential diagnosis: Axonchium (M.) spiculum n. sp. can be differentiated from all the species of Axonchium in having very typical spicules. However, it comes close to A. (M.) leptocephalum Altherr, 1953 and A. (M.) vaginatum Jairajpuri, 1965 but differs from the former in having a smaller and slender body, shorter odontophore, in the shape of vagina and vaginal sclerotization, anterior location of vulva, longer prorectum and in the shape and size of tail (L = 2.05-2.2 mm; a = 35-39; c = 73-80; V = 58-59; odontophore = 20-21 um; prorectum 6 anal body-widths long in A. (M.) leptocephalum). From A. (M.) vaginatum it differs in having smaller and slender body, posterior vulva, slightly longer and differently shaped

tail, in the shape and size of spicules and in having low ventromedian supplements (L = 2.26 mm; a = 38; c = 77; V = 48; spicules = 59-60 um in A. (M.) vacinatum).

AXONOLAIMUS BRACHYSOMUM COOMANS & HAIR, 1975

Diagnosis: Medium to large sized, 1.6-3.3 mm long. Lip region high and offset, with conoid to bluntly conoid lips. Odontostyle fusiform to cylindroid. Anterior oesophagus slender to very slender, with a spindle-shaped region infront of nerve ring. Constriction between the two parts of oesophagus isthmus-like. Anterior genital branch of female at least twice the body-width long. Vulva a transverse slit. Vaginal wall with heavy internal sclerotisation, disc-like structure between vulva and vagina absent. Males with spaced ventromedian supplements, spicules long. Tails hemispherical to convex conoid, similar in both sexes.

Type species: Axonchium (Eumonchium) vaivarum Hair & Coomans, 1974

A. (M.) macrocephalum Thorne, 1939

A. (M.) tacitum n. sp.

AXONCHIUM (AXONCHIUM) LACIAM n. sp.
(Fig. 26)

Dimensions:

Paratype females (5): L = 1.76–1.96 mm; a = 29–33; b = 2.3–2.9; c = 70–75; V = 55–57; c_1 = 7–10; c_2 = 13–16; odontostyle = 10–11 um; odontophore = 15–16 um; oesophagus = 675–772 um; prorectum = 217–241 um; rectum = 35–45 um; tail = 24–28 um; ABD = 36–37 um.

Holotype female: L = 1.86 mm; a = 34; b = 2.6; c = 72; V = 57; c_1 = 9; c_2 = 16; odontostyle = 11 um; odontophore = 15 um; oesophagus = 718 um; prorectum = 204 um; rectum = 45 um; tail = 26 um; ABD = 37 um.

Paratype males (4): L = 1.73–1.99 mm; a = 34–39; b = 2.3–2.6; c = 80–83; T = 50–53; odontostyle = 10–11 um; odontophore = 15–16 um; oesophagus = 718–768 um; spicules = 52–57 um; lateral guiding pieces = 15–16 um; ventromedian supplements = 7–9; prorectum = 186–261 um; tail = 24–29 um; ABD = 34–36 um.

Description:

Female: Body ventrally curved upon fixation. Cuticle finely striated, 3–4 um thick at midbody and 8–9 um at tail. Lateral chords one-ninth to one-eighth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region offset by deep constriction, 10-11 um or about one-fifth of body-width at the base of oesophagus. Amphids cup-shaped, their apertures 7-8 um or about three-fourth of the lip-width wide. Odontostyle fusiform, about one-lip width long, its aperture about one-third of its length. Guiding ring at 9-10 um or about one lip-width from anterior end. Odontophore simple rod-like, about 1.5 times the odontostyle length. Nerve ring encircles the anterior slender part of oesophagus at 130-155 um from anterior end. Constriction very deep and two parts of oesophagus abutting each other. Posterior expanded portion of oesophagus occupying about 62-71% of total oesophageal length, enclosed in a muscle sheath with straight bundles. Cardia 16-17 um or about one-third of the corresponding body-width long, tongue-shaped.

Vulva a transverse slit. Vagina 19-20 um or about one-third vulval body-width long, its wall adjacent to vulva distinctly offset from the body cuticle and heavily sclerotised. Anterior sexual branch sac-like, 125-179 um or 2-3 vulval body-widths long. Posterior sexual branch typical. Sphincter present at oviduct-uterus junction, uterus filled with sperms. Prerectum 6-7 anal body-widths long. Rectum about one anal body width long. Tail short, bluntly conoid, 0.7-0.8 anal body-width long with two caudal pores on each side.

Male: Supplements an adanal pair and 7-9 irregularly spaced ventromedians. Spicules long and comparatively slender, 1.4-1.5 anal body-widths long. Lateral guiding pieces distinctly sclerotised, about one-fourth of spicules length long with bifid end. Tail short, bluntly conoid 0.7-0.8 anal body-width long with two caudal pores on each side.

Type habitat and locality: Soil around roots of rose wood, Dalbergia latifolia from Silent Valley, district Malaparum, Kerala state.

Type specimens: Collected in October 1980; holotype female and a paratype male on slide Aporcelaimus (A.) tacitus n. sp./1; Other paratype males and females on slides Aporcelaimus (A.) tacitus n. sp./2-5.

Differential diagnosis: Aporcelaimus (A.) tacitus n. sp. comes close to A. (A.) valvatum Nair & Coomans, 1974 but differs in having smaller body, smaller odontophore, posterior location of vulva, longer tail, smaller spicules and lateral guiding pieces and in the number of ventromedian supplements (L = 2.5-3.2 mm; a = 28-36; c = 82-114; V = 44-48; odontophore = 20-24 um; spicules = 104-107 um and lateral guiding pieces = 24-26 um; ventromedian supplements = 11-14 in A.(A.)valvatum).

SUPERFAMILY LEPTONCHOIDEA THORNE, 1939 (FERRIS, 1971)

Diagnosis: Lip region continuous or set off; lips usually rounded and labial papillae not elevated. Lip region may bear a labial disc or inner liplets around the oral aperture. Odontostyle axial, often solid needle-like. Odontophore rod-like or arcuate with or without knobs or flanges. Oesophagus slender terminating into a pyriform or cylindroid basal bulb which may be separated by a constriction. A well developed triquetrous chamber may be present in the basal bulb. Intestine oligocytous. Female reproductive system monodelphic or amphidelphic. Vulva transverse or longitudinal. Males with arcuate spicules, lateral guiding pieces and few spaced ventromedian supplements. Tails greatly variable in shape and size, similar in both sexes (except in Ironasia in which female tail is elongate and male tail is rounded).

Type family: Leptonchidae Thorne, 1935

Other families: Aulolaimoididae Jairajpuri, 1964
Belonenchidae Thorne, 1964
Dorylaimoididae Siddiqi, 1969
Enchelaimidae Golden & Murphy, 1967
Sylencholaimellidae Jairajpuri, 1964 (Siddiqi, 1969)
Sylencholaimidae Filipjev, 1934 (Siddiqi, 1969)

KEY TO THE FAMILIES OF LEPTONCHOIDEA

1. Lip region with setae-like structures ..... Encholaimidae
   Lip region without setae-like structure 2

2. Oesophagus dorylaimoid 3
   Oesophagus leptonchoid 4

3. Odontostyle asymmetrical, odontophore angular .....
   ..... Dorylaimoididae
   Odontostyle symmetrical; odontophore straight, usually
   knobbed ..... Tylencholaimidae

4. Odontostyle needle-like, almost solid ..... Belonenchidae
   Odontostyle not needle-like, with distinct lumen 5

5. Oesophagus composed of three sections.....Aulolaimoididae
   Oesophagus composed of only two sections 6

6. Odontophore rod-like, generally flanged or knobbed .....
   ..... Tylencholaimellidae
   Odontophore arched, without flanges or knobs .....
   ..... Leptonchidae

FAMILY AULOLAIMOIDIDAE JAIRAJPURI, 1964

Diagnosis: Cuticle and subcuticle smooth or finely striated. Lip region continuous with body; lips amalgamated. Pharyngeal walls supported by minute rib-like structures. Amphids small, oval. Odontostyle small, coryleimoid. Odontophore rod-like or with flanges at its base. Oesophagus composed of three sections, basal bulb set off by a constriction and with thickened valvular chamber. Female reproductive system mono-opisthodelphic or amphidelphic. Vulva transverse. Males with slender spicules and few spaced ventromedian supplements; lateral guiding pieces obscure or absent; gubernaculum may be present. Tails hemispherical to long filiform, similar in both sexes.

Type genus: Aululaimoides Micoletzky, 1915

Other genera: Adenolaimus Andrássy, 1973
Goodeybrinkia Ali et al., 1973

KEY TO THE GENERA OF AULOLAIMOIDIDAE

1. Tail long, filiform ..... Aululaimoides
   Tail short, rounded 2
2. Pharyngeal structures present, female reproductive system mono-opisthodelphic ..... Adenolaimus
   Pharyngeal structures absent, female reproductive system amphidelphic ..... Goodeybrinkia

GENUS *ADENOLAIMUS* ANDRASSY, 1973

Andrassy (1973) proposed the genus *Adenolaimus* for the species, *A. dadayi* collected from New Guinea. He placed it under the family Aulolaimoididae on the basis of the three parts oesophagus. Cosco *et al.* (1975) transferred *Dorylium orthum* Thorne, 1939 to *Adenolaimus* and considered *A. dadayi* Andrassy, 1973 as its synonym. They also described a new species, *A. rhynarocha*. Species of this genus prefer moist soils. During the present work specimens of this genus were collected from Chamoli, Uttar Pradesh. Upon detailed study these were found to represent the type species and are described here in detail.

Diagnosis: Body tapering uniformly towards extremities. Cuticle and subcuticle with fine transverse striations. Lip region amalgamated, rounded. Pharyngeal walls supported by minute rib-like structures. Odontostyle distinct, dorylaimoid, asymmetrical. Odontophore long, lightly sclerotized, flanged. Oesophagus composed of three sections; slender anterior portion, glandular middle section and a muscular basal bulb. Oesophageal bulb constricted, valvular chamber present. Reproductive system mono-opisthodelphic. Vulva transverse, oval. Spicules slender, lateral guiding pieces and ventromedian supplements absent. Tails gradually tapering to a short rounded terminus, similar in both sexes.

Type species: Mesocriconema ornatum (Thorne, 1939)
Coseco et al., 1975

Other species: M. ahyparocha Coseco et al., 1975

Mesocriconema ornatum (THORNE, 1939) COSECO, FERRIS & FERRIS, 1975
(Fig. 17, A-E)

Dimensions:

Females (6): L = 1.00-1.14 mm; a = 34-40; b = 4.7-5.4; c = 35-37; V = 25-27; G_2 = 17-19; odontostyle = 5-6 um; odontophore = 17-19 um; oesophgus = 209-220 um; prerectum = 60-65 um; rectum = 15-16 um; tail = 27-33 um; ABD = 20-21 um.

Description:

Female: Body almost straight upon fixation, tapering slightly towards the extremities. Cuticle and subcuticle finely striated. Lateral chords about one-fourth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region continuous, rounded, liplets low. Stoma and pharyngeal walls supported by minute rod-like structures. Amphids small, oval, their apertures 3-4 um wide. Odontostyle small, arcuate about half lip-width long. Odontophore flanged, slightly sclerotized. Nerve ring encircling the oesophagus at 135-150 um from anterior end. Basal bulb set off by a constriction, 29-34 um long and 15-16 um wide, lumen with

valvular chamber. Cardia rounded.

Reproductive system mono-opisthodelphic. Vulva transverse, vagina with wide lumen and distinct muscular walls. Anterior uterine sac completely absent, posterior branch normal. Prerectum about three anal body-widths long. Rectum less than one anal body-width long. Tail tapering uniformly to a blunt terminus, 1.4-1.6 anal body-widths long. Caudal pores indistinct.

Male: Not found.

Habitat and locality: Soil around roots of water weeds from Govindghat, district Chamoli, Uttar Pradesh.

Remarks: Adenolaimus orthus is known only from United States and the eastern New Guinea. It is being reported here for the first time from India. The Indian specimens are similar to those reported earlier except that they have a slightly longer oesophagus (oesophagus = 130 um in holotype).

FAMILY DORYLAIMOIDIDAE SIDDIQI, 1969

Diagnosis: Cuticle and subcuticle finely striated. Lip region continuous or set off; lips rounded. Odontostyle asymmetrical. Guiding ring thin or very thick, sclerotized. Odontophore rod-like or arcuate. Basal oesophageal bulb cylindroid, usually elongated. Female reproductive system mono-opisthodelphic or amphidelphic. Males with well developed arcuate spicules, lateral guiding pieces and few spaced ventromedian supplements. Tails varying from almost rounded to long filiform, similar in both sexes (except in Morania).

Type subfamily: Dorylaimoidinae Siddiqi, 1969 (Khera, 1970)

Other subfamily: Calcilaiminae Coseco et al., 1976

SUBFAMILY DORYLAIMOIDINAE SIDDIQI, 1969 (KHERA, 1970)

Diagnosis: Body length usually less than 2 mm. Lip region continuous or set off from body; lips rounded and labial papillae not elevated. Stoma small. Amphids stirrup-shaped. Odontostyle small, asymmetrical. Guiding ring thin, not sclerotized. Odontophore rod-like or arcuate. Basal oesophageal bulb usually elongated, may be separated by a constriction. Cardia hemispherical. Female reproductive system mono-opisthodelphic or amphidelphic. Vulva transverse. Males with well developed spicules, lateral guiding pieces and 2-5 spaced ventromedian

supplements. Tails varying from almost rounded to long filiform, similar or dissimilar in sexes.

Type genus: Dorylaimoides Thorne & Swanger, 1936

Other genus: Morania Bagri & Jairajpuri, 1969

SUBFAMILY CALOLAIMINAE COBB, FERRIS & FERRIS, 1976

Diagnosis: Large sized nematodes, 3.0-6.0 mm long. Cuticle and subcuticle finely striated. Lip region continuous with the body, labial papillae elevated. Odontostyle asymmetrical. Guiding ring very thick, belt-like. Odontophore rod-like. Basal expanded part of oesophagus elongate cylindroid or small pyriform. Female reproductive system amphidelphic. Vulva transverse or pore-like. Males with dorylaimoid spicules, constricted lateral guiding pieces and a series of spaced ventromedian supplements. Tails elongate-conoid to long filiform, similar in both sexes.

Type genus: Calolaimus Timm, 1964

Other genus: Zimmia Cosco et al., 1976

KEY TO SUBFAMILIES AND GENERA OF DORYLAIMOIDIDAE

1. Odontophore rod-like; guiding ring thick.....Calolaiminae 2
   Odontophore arcuate; guiding ring not thick .....
   ..... Dorylaimoidinae 3

2. Oesophageal bulb long cylindroid with sclerotized thickenings
   ..... Calolaimus
   Oesophageal bulb short pyriform without thickenings .....
   ..... Zimmia

3. Tails of somes similar ..... Dorylaimoides
   Tails of somes dissimilar ..... Perasia

GENUS *Dorylaimoides* ANDRÁSSY & SWANGER, 1936

The genus *Dorylaimoides* was proposed by Thorne & Swanger, 1936 with *D. terra* as its type species and was placed under the family Dorylaimidae De Man, 1876. Thorne (1939) transferred this genus to the family Leptonchidae Thorne, 1935. Since then a number of species have been added to this genus by various workers, viz., Meyl (1956), Andrássy (1959 & '62), Heyns (1963), Siddiqi (1964 & '65), Thorne (1964), Jairajpuri (1964 & '65), Swanger (1967), Baqri & Jairajpuri (1969), Coseco *et al.* (1976), Baqri & Khera (1979), Yeates (1979) etc. Coseco *et al.*(1976) revised the genus *Dorylaimoides*, described three new species and gave a key to its species.

Brzeski & Szczygiel (1961) described the genus *Marginia* which was later synonymised with *Dorylaimoides* by Szczygiel (1965). Jairajpuri (1964) proposed the genus *Leptonema* which was later renamed as *Shamimonema* by Chawla *et al.* (1965), as the name *Leptonema* was pre-occupied. Khera (1970), Monteiro (1970) and Coseco *et al.* (1976) do not regard *Shamimonema* as valid but a junior synonym of *Dorylaimoides*.

The species of the genus *Dorylaimoides* exhibit a large number of variations in their morphological characters, e.g., constricted or non-constricted oesophagus, monodelphic or amphidelphic gonads and rounded, conoid or filiform tails.

some of these characters have been used for the separation of genera. These features, however, do not seem at present to be distinct and important enough to warrant splitting of the genus. The genus at present includes over 60 species of which about 20 are already reported from India.

The species of the genus Dorylaimoides are of common occurrence in India. Siddiqi (1964 & '65), Jairajpuri (1964 & '65) Husain & Khan (1968), Baqri & Jairajpuri (1969), Mahajan (1973), Baqri & Khera (1979) etc., have added species to this genus from this country. During the present work specimens of Dorylaimoides were collected from different localities, and these, upon detailed study, were found to represent two new species. These have been described in detail.

Diagnosis: Body length usually less than 2 mm. Cuticle and subcuticle finely striated. Radial striae and refractive elements absent. Amphids usually stirrup-shaped with slit-like apertures. Odontostyle asymmetrical, dorsal side longer than ventral. Guiding ring single. Odontophore usually arcuate or angular. Basal expanded part of oesophagus cylindrical, rarely constricted, about one-fourth to one-third of oesophageal length. Cardia hemispherical. Female reproductive system monodelphic (mono-prodelphic or mono-opisthodelphic) or amphidelphic. Vulva transverse. Males with dorylaimoid spicules, lateral guiding

pieces and a series of spaced ventromedian supplements. Tails hemispherical to long filiform, similar in both sexes.

Type species: Dorylaimoides torax Thorne & Swanger, 1936

Other species: D. akorus Goseco et al., 1976

D. anguinus Sauer, 1967

D. arcuatus Siddiqi, 1964

D. arcuicaudatus Baqri & Jairajpuri, 1969

D. brevidens Thorne, 1964

D. succinator Sauer, 1967

D. bulbosus (Brzeski & Szczygiel, 1961) Szczygiel, 1965

D. chamoliensis n. sp.

D. chathami Yeates, 1979

D. constrictoides Goseco et al., 1976

D. constrictus Baqri & Jairajpuri, 1969

D. corurus Thorne, 1939

D. dactylurus Heyns, 1963

D. elaboratus Siddiqi, 1965

D. elegans (De Man, 1880) Thorne & Swanger, 1936

D. elongatus Husain & Khan, 1968

D. exodis Goseco et al., 1976

D. ilyasi Ahmad & Jairajpuri, 1980

D. indicus Jairajpuri, 1965

D. kalincus n. sp.

P. lamichus Timm, 1964

P. lamtura Siddiqi, 1965

P. lamtus Husain & Khan, 1968

P. limnophilus (De Man, 1880) Loof, 1964

P. longicaudatus (Imamura, 1931) Thorne & Swanger, 1936

P. longiurus Siddiqi, 1965

P. loofi Baqri & Khera, 1979

P. microlaticyti (De Man, 1921) Thorne & Swanger, 1936

P. mitus Sauer, 1967

P. nodeatus Siddiqi, 1965

P. parateres Siddiqi, 1964

P. pari Mahajan, 1973

P. pecrus Thorne & Swanger, 1936

P. paulbuchneri Meyl, 1956

P. pretoriensis Heyns, 1963

P. reversus Thorne, 1964

P. riparius Andrássy, 1962

P. saueri Baqri & Jairajpuri, 1969

P. siddiqii Baqri & Khera, 1979

P. similis Thorne, 1964

P. thecolaimus Heyns, 1963

P. thienemanni (V. Schneider, 1937) Jairajpuri et al., 1980

P. thornei (Jairajpuri, 1964) Chawla et al., 1965

P. venustus Andrássy, 1959

P. wehrteri Sauer, 1967

Dorylaimellus [illegible] n. sp.
(Fig. 27)

Dimensions:

Paratype male: L = 1.52 mm; a = 32; b = 6.2; c = 45; T = 54; odontostyle = 10 um; odontophore = 16 um; oesophagus = 245 um; spicules = 49 um; lateral guiding pieces = 10 um; ventromedian supplements = 6; prerectum = 216 um; tail = 34 um; ABD = 36 um.

Holotype female: L = 1.41 mm; a = 29; b = 5.7; c = 39; V = 45; G_1 = 15; G_2 = 16; odontostyle = 10 um; odontophore = 16 um; oesophagus = 246 um; prerectum = 147 um; rectum = 36 um; tail = 35 um; ABD = 34 um.

Juvenile: L = 1.21 mm; a = 27; b = 4.8; c = 45; odontostyle = 8 um; odontophore = 13 um; oesophagus = 234 um; prerectum = 151 um; rectum = 35 um; tail = 25 um; ABD = 27 um.

Description:

Female: Body ventrally curved upon fixation, tapering slightly towards extremities. Cuticle finely striated, 3-4 um thick at midbody and 8-9 um at tail. Lateral chords about one-sixth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region continuous with body contour, 11 um or about one-fourth of body-width at base of oesophagus. Amphids stirrup-

shaped, their apertures 8 um or about two-third of lip-width. Odontostyle about one lip-width long, its aperture about one-third of its length. Guiding ring at 9 um or slightly less than one lip-width from anterior end. Odontophore arcuate, sclerotised about 1.6 times the odontostyle length. Nerve ring encircling the anterior slender part of oesophagus at 114-117 um from anterior end. Basal expanded part of oesophagus continuous with the anterior slender part, occupying about 29% of total oesophageal length. Cardia rounded, 5 um long. Location of oesophageal gland nuclei and their orifices as given in Table-I.

Reproductive system amphidelphic. Vulva transverse. Prorectum about four anal body-widths long. Rectum slightly more than one anal body-width long. Tail short rounded with digitate terminus, slightly more than one anal body-width long with two caudal pores on each side.

Male: Supplements an adanal pair and six regularly spaced ventromedians. Spicules about 1.4 anal body-width long. Lateral guiding pieces about one-fifth of spicules length. Prorectum about six anal body-widths long. Tail short, rounded with digitate terminus about one anal body-width long with two caudal pores on each side.

Type habitat and locality: Soil around roots of Pinus sp. from Chançaria, district Chamoli, Uttar Pradesh.

Type specimens: Collected in October 1979; holotype female on slide Dorylaimoides chamoliensis n. sp./1; paratype male and juvenile on slides Dorylaimoides chamoliensis n. sp./2-3.

Differential diagnosis: Dorylaimoides chamoliensis n. sp. comes close to D. terna Thorne & Swanger, 1936 and D. indicus Jairajpuri, 1965 but differs from the former in having wider body, longer odontostyle and oesophagus, smaller basal expanded part of oesophagus, longer tail with digitate terminus and longer spicules (a = 36; b = 6.7; c = 59; odontostyle = 6 um; basal expanded part of oesophagus = 32%; spicules = 38 um and tail convex conoid with rounded terminus in D. terna). From D. indicus it differs in having a wider body, longer and digitate tail and longer spicules (a = 40; c = 64; spicules = 38 um; and tail rounded in D. indicus).

DORYLAIMOIDES KALINGUS N. SP.
(Fig. 28)

Dimensions:

Paratype females (3): L = 0.86-0.97 mm; a = 41-42; b = 5.2-5.8; c = 28-32; V = 36-38; G_1 = 2.6-3.2; G_2 = 13-17; odontostyle = 7-8 um; odontophore = 11-12 um; oesophagus = 164-165 um; prerectum = 98-112 um; rectum = 18-20 um; tail = 30-32 um; ABD = 15-16 um.

Holotype female: L = 0.87 mm; a = 37; b = 5.4; c = 27; V = 39; G_1 = 3.6; G_2 = 15; odontostyle = 8 um; odontophore = 11 um; oesophagus = 160 um; prerectum = 100 um; rectum = 16 um; tail = 33 um; ABD = 16 um.

Paratype males (2): L = 0.93-0.96 mm; a = 44-46; b = 5.3-5.6; c = 31; T = 51-55; odontostyle = 7-8 um; odontophore = 11-12 um; oesophagus = 171-174 um; spicules = 22-24 um; lateral guiding pieces = 5-6 um; ventromedian supplements = 4-5; prerectum = 111-115 um; tail = 30-31 um; ABD = 17-19 um.

Description:

Females: Body ventrally curved upon fixation, C-shaped, tapering gradually towards extremities. Cuticle finely striated. Lateral chords about one-fifth to one-fourth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region narrow offset from body by a slight depression, 6 um or about one-third of body-width at base of oesophagus. Amphids cup-shaped, their apertures 5-6 um or about two-third of lip-width. Odontostyle about one lip-width long. Guiding ring at 5 um or about half lip-width from anterior end. Odontophore arcuate 1.4-1.5 times the odontostyle length. Nerve ring encircles the anterior slender part of oesophagus at 70-85 um from anterior end. Basal expanded portion of oesophagus offset by a constriction, occupying about 25-27% of oesophageal length.

Cardia rounded small. Location of oesophageal gland nuclei and their orifices as given in Table-1.

Reproductive system mono-opisthodelphic. Vulva transverse Anterior uterine sac rudimentary, 27-32 um or 1.1-1.3 anal body-width long, packed with sperms. Posterior genital branch normal. Prerectum 6-7 anal body-widths long. Rectum about one anal body-width long. Tail short, conoid, ventrally curved, about two anal body-widths long with one or two caudal pores on each side.

Male: Supplements an adanal pair and 4-5 irregularly spaced ventromedians. Spicules 1.3-1.4 anal body-width long. Lateral guiding pieces about one-fourth of spicules length. Prerectum 6-7 anal body-widths long. Tail short, conoid, ventrally curved, 1.6-1.7 anal body-widths long with two caudal pores on each side.

Type habitat and locality: Soil around roots of paddy, Oryza sativa L., from Bhubaneswar, Orissa state.

Type specimens: Collected in March 1979; holotype female and a paratype male on slide Dorylaimoides kalingus n. sp./1; other paratype males and females on slides Dorylaimoides kalingus n.sp./2-3.

Differential diagnosis: Dorylaimoides kalingus n. sp. comes

close to *H. proteriensis* Heyns, 1963 and *H. arcuatus* Siddiqi, 1964 but differs from the former in having a smaller and narrower body, longer oesophagus, smaller spicules and longer and differently shaped tail (L = 1.05 mm; a = 30; b = 6.8; c = 45; spicules = 30 um and tail bluntly conoid in *H. proteriensis*). From *H. arcuatus* it differs in having constricted oesophageal bulb, posteriorly located vulva and smaller tail (c = 12; V = 33; oesophageal bulb not constricted in *H. arcuatus*).

Genus *Loxasia* Baqri & Jairajpuri, 1969

The genus *Loxasia* was proposed by Baqri & Jairajpuri(1969) with *L. dimorphicauda* as its type species. They also transferred *Dorylaimoides rhabdontus* Kreis, 1930 to *Loxasia*. This genus is peculiar among the leptonchids because of the sexual dimorphism in tail. During the present work specimens of *Loxasia* were collected from Chamoli, Uttar Pradesh. On detailed study they were found to represent a new species and are described hereunder.

Diagnosis: Body length less than 2 mm. Cuticle and subcuticle finely striated. Lateral chords may be provided with glandular organs. Amphids stirrup-shaped. Lip region continuous with the body; lips rounded. Odontostyle asymmetrical, dorsal side longer than ventral. Guiding ring single. Odontophore arcuate. Basal expanded portion of oesophagus cylindroid about one-third of the oesophageal length. Cardia hemispherical. Males with dorylaimoid spicules, lateral guiding pieces and a series of spaced ventromedian supplements. Tail elongate-conoid in females and bluntly rounded in males.

Type species: *Loxasia dimorphicauda* Baqri & Jairajpuri, 1969

Other species: *L. parva* n. sp.

L. rhabdontus (Kreis, 1930)
Baqri & Jairajpuri, 1969

MESOSIA PARVA N. SP.
(Fig. 29)

Dimensions:

Paratype females (3): L = 1.14–1.34 mm; a = 33–41; b = 5.9–6.5; c = 23–25; V = 42–46; G_1 = 9–13; G_2 = 10–13; odontostyle = 8–9 um; odontophore = 12–14 um; oesophagus = 186–218 um; prerectum = 151–179 um; rectum = 21–26 um; tail = 48–53 um; ABD = 20–27 um.

Holotype female: L = 1.29 mm; a = 33; b = 6.6; c = 23; V = 43; G_1 = 11; G_2 = 12; odontostyle = 8 um; odontophore = 13 um; oesophagus = 195 um; prerectum = 54 um; rectum = 24 um; tail = 56 um; ABD = 21 um.

Paratype males (4): L = 1.10–1.26 mm; a = 33–39; b = 6.2–6.6; c = 43–46; T = 52–56; odontostyle = 8–9 um; odontophore = 13–14 um; oesophagus = 176–194 um; spicules = 35–36 um; lateral guiding pieces = 5 um; ventromedian supplements = 5–7; prerectum = 155–172 um; rectum = 31–33 um; tail = 24–30 um; ABD = 24–26 um.

Description:

Female: Body ventrally curved upon fixation, assuming C-shape, tapering towards extremities. Cuticle finely striated. Lateral chords one-eighth to one-seventh of body-width at midbody.

Glandular organs conspicuous, 41-48 in number, variable in size and irregularly spaced.

Lip region offset of a depression, 10-11 um or about one-third of body-width at base of oesophagus. Amphids cup-shaped, their apertures 6-7 um or about three-fifth of the corresponding body-width wide. Odontostyle measures 7-8 um ventrally and 8-9 um dorsally, its aperture 3 um long. Guiding ring single, at 6-8 um from anterior end of body. Odontophore arcuate, about 1.5 times the odontostyle length. Nerve ring encircles the anterior slender part of oesophagus at 93-98 um from anterior end. Basal expended portion of oesophagus occupying about 27-29% of total oesophageal length. Cardia bluntly conoid. Location of oesophageal gland nuclei and their orifices as given in Table - I.

Reproductive system amphidelphic. Vulva transverse. Vagina 15-16 um or about half of the corresponding body-width long. Prerectum 5-8 anal body-widths long. Rectum about one anal body-width long. Tail elongate-conoid with acute terminus 2-3 anal body-widths long with two caudal pores on each side.

Male: Supplements an adanal pair and 5-7 regularly spaced ventromedians. Spicules 1.3-1.4 anal body-width long. Prerectum 6-7 anal body-widths long. Rectum about one anal body-width long. Tail bluntly conoid, about one anal body-width long with two caudal pores on each side.

Type habitat and locality: Soil around roots of wild tree from Govindghat, district Chamoli, Uttar Pradesh.

Type specimens: Collected in October 1979; holotype female and a paratype male on slide Morsaia parva n. sp./1; other paratype males and females on slides Morsaia parva n.sp./2-4.

Differential diagnosis: Morsaia parva n. sp. comes close to M. dimorphicauda Bagri & Jairajpuri, 1969 but differs in having smaller body, in the shape of lip region, slightly smaller odontostyle and odontophore, lesser number of hypodermal glands and in the shape of tail (L = 1.53-1.91 mm; odontophore = 17-20 um; hypodermal glands = 57-70 in M. dimorphicauda).

Genus Cataloimus Timm, 1964

Timm (1964) established the genus Cataloimus with C. papillatus as its type. He included Dorylaimoides ditlevseni (Micoletzky, 1922) Thorne & Swanger, 1936 also in this genus. The genus Cataloimus is characterized by having a thick spear guiding ring, oesophageal bulb with thickened inner lining, constricted accessory pieces of spicules and large papillae on the male tail. Siddiqi (1965) described the genus Calorhinema for C. lenorum with the same characters as Cataloimus. Siddiqi (1966) therefore, synonymised Calorhinema with Cataloimus but also emended its generic diagnosis. Loseco et al. (1976) revised the genus Cataloimus, described a new species C. notus and proposed the subfamily Cataloiminae under the family Dorylaimoididae for the genera Cataloimus and Timmus. Recently, Khanchand & Jairajpuri (1980) have described a new species, C. paranapillatus from Manipur, India.

In the present work specimens of Cataloimus were obtained in the soil samples that were collected from Kerala state. Upon detailed study they were found to belong to a new species of this genus. It is named C. amphidius n. sp. and is described below.

Diagnosis: Large sized nematodes. Cuticle and subcuticle finely striated. Lip region continuous with the body, labial papillae

elevated. Odontostyle asymmetrical. Guiding ring strongly sclerotized, thick belt-like. Odontophore simple rod-like, sclerotized. Basal expanded portion of oesophagus cylindroid about one-third or less of oesophageal length, lumen with thick lining. Reproductive system amphidelphic. Vulva transverse or pore-like. Males with dorylaimoid spicules, constricted lateral guiding pieces and a series of spaced ventromedian supplements. Tails elongate-conoid, similar in sexes. Male tail with distinct papillae.

Type species: Calolaimus papillatus Firna, 1964

Other species: C. amphidius n. sp.
C. ditlevseni (Micoletzky, 1922) Firna , 1964
C. leporus (Siddiqi, 1965) Siddiqi, 1966
C. notus Cosco et al., 1976
C. paraparvilatus Dhanachand & Jairajpuri, 1980

Calolaimus Amphidius N. sp.
(Fig. 30)

Dimensions:

Peratype female: L = 3.20 mm; a = 103; b = 13.6; c = 16; V = 37; c_1 = 9; c_2 = 10; odontostyle = 6 um; odontophore = 9 um; oesophagus = 234 um; prerectum = 153 um; rectum = 24 um; tail = 205 um; ABD = 24 um.

Holotype female: L = 2.58 mm; a = 80; b = 11.4; c = 15; V = 44; c_1 = 9; c_2 = 11; odontostyle = 6 um; odontophore = 9 um; oesophagus = 226 um; prerectum = 146 um; rectum = 23 um; tail = 171 um; ABD = 22 um.

Paratype males (4): L = 2.56-2.97 mm; a = 89-103; b = 11.1-13.6; c = 24-30; T = 60-61; odontostyle = 6-7 um; odontophore = 9-10 um; oesophagus = 226-234 um; spicules = 31-32 um; lateral guiding pieces = 8 um; ventromedian supplements = 12-13; prerectum = 236-308 um; tail = 99-109 um; ABD = 23-24 um.

Description:

Female: Body long slender, tapering posteriorly. Cuticle finely striated. Lateral chords about one-third of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region offset by slight depression. 9-10 um or about one-third of body-width at base of oesophagus. Amphids cup-shaped, thick-walled, their apertures 6-7 um or about two-third of the corresponding body-width wide. Odontostyle asymmetrical, 0.6-0.7 lip-width long, its aperture one-third of its length. Guiding ring sclerotized, 3-4 um from anterior end. Odontophore simple rod-like, about one lip-width long. Nerve ring encircles the anterior slender part of oesophagus at

91-97 u from anterior end. Basal expanded portion of oesophagus occupying about 25-30% of total oesophageal length. Inner cuticular lining of the bulb thickened anteriorly and posteriorly. Cardia short bluntly conoid. Location of oesophageal gland nuclei and their orifices as given in Table - I.

Reproductive system amphidelphic. Vulva transverse. Prorectum 6-7 anal body-widths long. Rectum about one anal body-width long. Tail elongate-conoid with dorsally bent acute terminus, 8-9 anal body-widths long. Caudal pores indistinct.

Male: Supplements an adanal pair and 12-13 regularly spaced ventromedians. Spicules dorylaimoid, about 1.3 anal body-width long. Lateral guiding pieces about one-fourth of spicules length. Prorectum 10-12 anal body-widths long. Tail elongate-conoid, ventrally arcuate 4-5 anal body-widths long with 2-3 well developed caudal papillae.

Type habitat and locality: Soil around roots of banana, Musa paradisiaca L., from Olavakat, district Palakat, Kerala state.

Type specimens: Collected in September 1980; holotype female and a paratype male on slide Calolaimus amphigius n. sp./1; other paratype males and female on slides Calolaimus amphigius n.sp. /2-4.

Differential diagnosis: Cephalaimus amphidius n. sp. comes close to C. lenorus (Siddiqi, 1965) Siddiqi, 1968 and C. notus (Loseco et al., 1976 but differs from both these species in having a smaller body and thick-walled amphids. It further differs from the former in having a wider body, longer oesophagus and tail (L = 3.95 mm; a = 124; b = 19.6; c = 23 in C. lenorus). From C. notus it can further be differentiated in having a longer tail (L = 3.9 mm; c = 11.6; in C. notus).

FAMILY TYLENCHOLAIMIDAE FILIPJEV, 1934 (SIDDIQI, 1969)

Diagnosis: Cuticle loose with radial striae and fixation folds. Body pores indistinct. Lip region cap-like, usually set off by a constriction; lips angular and labial papillae elevated. Labial disc may be present around oral aperture. Odontophore rod-like with or without basal knobs. Oesophagus dorylaimoid; basal expanded part with thickened inner linings. Cardia usually hemispherical. Intestine oligocytous. Female reproductive system monodelphic or amphidelphic. Males with well developed spicules, lateral guiding pieces and ventromedian supplements. Tails varying from almost rounded to long filiform, similar in both sexes.

Type subfamily: Tylencholaiminae Filipjev, 1934

Other subfamilies: Ammotylinae Andrássy, 1976
Utahnematinae Siddiqi, 1969
Vanderlindiinae Siddiqi, 1969
Xiphinemellinae Jairajpuri, 1964
Metadorylaiminae Andrássy, 1976

SUBFAMILY TYLENCHOLAIMINAE FILIPJEV, 1934

Diagnosis: Usually small sized nematodes, robust body. Cuticle and subcuticle finely striated. Radial striae and fixation folds usually present. Lip region set off from body; lips

amalgamated and labial papillae distinctly elevated. Labial disc may be present around oral aperture. Odontostyle small, rod-like or asymmetrical. Odontophore with refractive basal knobs. Basal expanded part of oesophagus elongate cylindroid. Female reproductive system monodelphic or amphidelphic. Males with well developed spicules, lateral guiding pieces and few spaced ventromedian supplements. Tails almost rounded to elongate-conoid, similar in both sexes.

Type genus: Xylencholaimus De Man, 1876

Other genera: Chitenodium Furstenberg & Heyns, 1966
Macconectus Thorne, 1939
Oostenbrinkelia Jairajpuri, 1965
Xenonchium Siddiqi & Khan, 1964

SUBFAMILY XYLENCHOLAIMINAE JAIRAJPURI, 1964

Diagnosis: Small to medium sized nematodes 1.0-3.0 mm long, robust body. Cuticle smooth, subcuticle with coarse transverse striations. Lip region cap-like, set off by a constriction with a distinct labial disc. Odontostyle long, attenuated. Odontophore with broad basal flanges. Oesophagus slender terminating into a constricted basal bulb. Female reproductive system amphidelphic. Vulva transverse. Males with dorylaimoid spicules, lateral guiding pieces and numerous spaced ventromedian

supplements. Tails rounded or short conoid, similar in both sexes.

Type and only genus: Xiphinemella Loos, 1950

SUBFAMILY METADORYLAIMINAE ANDRASSY, 1976

Diagnosis: Moderate sized nematodes, 2-3 mm long, robust body. Cuticle and subcuticle finely striated. Radial striae present. Lip region set off from the body, cap-like. Odontostyle heavy with thickened arms, aperture small to wide. Odontophore rod-like. Oesophagus dorylaimoid. Female reproductive system amphidelphic. Vulva transverse or longitudinal. Tails short, convex-conoid. Male not known.

Type genus: Metadorylaimus Dalrajpuri & Goodey, 1966

Other genus: Neometadorylaimus n. gen.

KEY TO SUBFAMILIES AND GENERA OF TYLENCHOLAIMINAE

1. Odontostyle robust .... Metadorylaiminae 2
   Odontstyle not robust 3
2. Odontostyle aperture about one-eighth of its length; vulva transverse ..... Metadorylaimus
   Odontostyle aperture about one-third of its length; vulva longitudinal..... Neometadorylaimus

3. Odontostyle asymmetrical..... Mantasiinae, Mantasium
   Odontostyle symmetrical 4

4. Odontostyle long with narrow lumen; odontophore rod-like or with basal flanges 5
   Odontostyle short with distinct lumen; odontophore usually with basal knobs ..... Tylencholaiminae 7

5. Odontophore with basal flanges .....
   ..... Xiphinemaiinae, Xiphinemaia
   Odontophore without basal flanges 6

6. Odontostyle thick-walled, strongly curved .....
   ..... Vandenlindiinae, Vandenlindia
   Odontostyle thin-walled, straight .....
   ..... Utahnematinae, Utahnema

7. Lip region with a distinct disc 8
   Lip region without disc 9

8. Basal expanded part of oesophagus long and cylindrical; female reproductive system mono-prodelphic..... Discomyctus
   Basal expanded part of oesophagus short and pyriform; female reproductive system mono-opisthodelphic.....Goodeybrinkella

9. Odontophore with basal knobs ..... Tylencholaimus
   Odontophore without basal knobs 10

10. Odontostyle small, female reproductive system monoprodelphic
    ..... Xenonchium
    Odontostyle long, female reproductive system amphidelphic..
    ..... Chitwoodius

GENUS TYLENCHOLAIMUS DE MAN, 1876

The genus Tylencholaimus was erected by De Man (1876) for nematodes resembling Dorylaimus but with knobbed spear extensions. Filipjev (1934) proposed the subfamily Tylencholaiminae under the family Dorylaimidae and assigned Tylencholaimus as its type genus. Thorne (1939) transferred several species from Tylencholaimus to other genera. Andrássy (1959 & '67), Siddiqi (1964), Loof (1964), Zimm (1964), Kruger (1965), Jairajpuri (1965) etc., have added species to this genus. Loof & Jairajpuri (1968) revised the genus Tylencholaimus, transferred it to the family Leptonchidae, described eight new species and also provided a key to the species. Siddiqi (1969) raised Tylencholaiminae to familial rank. Recently, Yeates (1979) and Ahmad & Jairajpuri (1980) have added more species under it.

In the present work specimens of Tylencholaimus were found in the soil samples collected from several localities in India. On close examination they were found to represent three known and two new species. The three known species are reported for the first time from India.

Diagnosis: Body usually less than 1.5 mm; robust. Cuticle and subcuticle finely striated. Radial striae present. Lip region cap-like, distinctly set off from the body. Amphids cup-shaped. Odontostyle dorylaimoid, usually equal to width of lip region.

Guiding ring single. Odontophore rod-like, with small knobs at its base. Oesophagus dorylaimoid consisting of an anterior slender part and a short basal expanded part. Cardia hemispherical. Female reproductive system monodelphic (mono-prodelphic or mono-opisthodelphic) or amphidelphic. Vulva transverse. Males with dorylaimoid spicules, lateral guiding pieces and a series of spaced ventromedian supplements. Tails hemispherical to elongate-conoid, similar in both sexes.

Type species: Xylencholaimus mirabilis (Butschli, 1873) De Man, 1876

Other species: X. airolensis Loof & Jairajpuri, 1968
X. aquaticus n. sp.
X. australis Yeates, 1979
X. chathami Yeates, 1979
X. concentus Loof & Jairajpuri, 1968
X. crassus Loof & Jairajpuri, 1968
X. dorae Kruger, 1965
X. formosus Loof & Jairajpuri, 1968
X. fuscus (Kreis, 1929) n. comb.
X. gertii Kruger, 1965
X. innatus Ahmad & Jairajpuri, 1980
X. leptorchoides Loof, 1964
X. maritus Loof & Jairajpuri, 1968
X. microsaccus Yeates, 1979

T. minimus De Man, 1876

T. mongolicus Andrássy, 1967

T. nanus Thorne, 1939

T. obscurus Jairajpuri, 1965

T. pakistanensis Timm, 1964

T. paradonus Loof & Jairajpuri, 1968

T. paratereus n. sp.

T. proximus Thorne, 1939

T. pusillus Loof & Jairajpuri, 1968

T. rossi Yeates, 1979

T. savaryi Loof & Jairajpuri, 1968

T. steeki Steiner, 1914

T. suryawanshi Ali & Chisty, 1972

T. torus Thorne, 1939

T. vidus Jairajpuri, 1965

T. vicli Andrassy, 1959

T. zealandicus De Man, 1876

Tylenchorhynchus pakistanensis Timm, 1964

Dimensions:

Females (5): L = 0.37-0.40 mm; a = 21-23; b = 3.4-3.8; c = 20-30; V = 42-45; G_2 = 15-22; odontostyle = 7-8 um; odontophore = 8-9 um; oesophagus 105-109 um; prerectum = 30-33 um; rectum = 10-13 um; tail = 12-14 um; ABD = 11-13 um.

Habitat and locality: Soil around roots of paddy, Oryza sativa L., from Bhubaneswar, Orissa state.

Remarks: The present specimens of T. pakistanensis fit well with those described by Finn, 1964 except for slightly shorter body and rectum (L = 0.42-0.50 mm; rectum = 1.7 anal body-widths long in type specimens).

XYLENCHOLAIMUS DORAE KRUGER, 1965

Dimensions:

Females (4): L = 0.69-0.74 mm; a = 24-26; b = 3.7-4.3; c = 28-36; V = 65-66; c_1 = 12-16; odontostyle = 8-9 um; odontophore = 9-10 um; oesophagus = 172-195 um; rectum = 15-17 um; tail = 20-23 um; ABD = 19-22 um.

Habitat and locality: Soil around roots of coconut, Cocos nucifera L., from Mandavi, district Kutch, Gujarat state.

Remarks: Xylencholaimus dorae was described by Kruger (1965) from South Africa and the Indian specimens conform well with these except for slightly shorter body and the absence of well developed terminal caudal pore (L = 0.73-0.95 mm in type specimens).

Tylencholaimus proximus Thorne, 1939

Dimensions:

Females (4): L = 0.47-0.48 mm; a = 29-32; b = 3.0-3.6; c = 35-36; V = 72-74; C_1 = 20-23; odontostyle = 6 um; odontophore = 7 um; oesophagus = 132-159 um; rectum = 9-10 um; tail = 13-14 um; ABD = 10-11 um;

Habitat and locality: Soil around roots of grasses from Nainital, Uttar Pradesh.

Remarks: The present specimens of Tylencholaimus proximus are similar to those described by Thorne (1939) except that these have a narrower body and smaller tail (a = 24; c = 25 in type specimens).

Tylencholaimus bifurcatus n. sp.
(Fig. 31)

Dimensions:

Paratype females (5): L = 1.25-1.44 mm; a = 31-40; b = 4.9-5.9; c = 49-60; V = 55-61; C_1 = 15-21; C_2 = 14-17; odontostyle = 7-8 um; odontophore = 11-12 um; oesophagus = 242-260 um; prerectum = 23-30 um; rectum = 23-25 um; tail = 21-26 um; ABD = 23-32 um.

Holotype female: L = 1.27 mm; a = 31; b = 4.9; c = 49; V = 59; G_1 = 17; G_2 = 17; odontostyle = 8 um; odontophore = 12 um; oesophagus = 260 um; prerectum = 28 um; rectum = 23 um; tail = 26 um; ABD = 32 um.

Paratype male: L = 1.38 mm; a = 43; b = 5.8; c = 60; T = 46; odontostyle = 8 um; odontophore = 11 um; oesophagus = 237 um; spicules = 30 um; lateral guiding pieces = 7 um; ventromedian supplements = 3; prerectum = 50 um; tail = 23 um; ABD = 23 um.

Description:

Female: Body ventrally curved upon fixation. Cuticle smooth, subcuticle finely striated and loose. Lateral chords about one-third of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region offset by a deep constriction, wider than the adjoining body, 11-12 um or about one-third of body-width at base of oesophagus. Amphids stirrup-shaped, their apertures 4-5 um or about half of the corresponding body-width. Odontostyle 0.6-0.7 lip-width long, its aperture about one-third of its length. Guiding ring single, 4-5 um or about half lip-width from anterior end. Odontophore rod-like with small knobs at its base, 1.4-1.6 times the odontostyle length. Nerve ring encircles the anterior slender part of oesophagus at

97-105 um from anterior end. Basal expanded portion of oesophagus occupying about 37-40% of total oesophageal length. Cardia short conoid with rounded tip. Location of oesophageal gland nuclei and their orifices as given in Table I.

Reproductive system amphidelphic. Vulva transverse, vagina thick-walled, about half of the corresponding body-width. Oviduct-uterus junction indistinct. Prerectum about one anal body-width long. Rectum less than one anal body-width long. Tail bluntly conoid with rounded terminus, 0.8-0.9 anal body-width long and with a very distinct terminal caudal pore.

Male: Supplements an adanal pair and three well spaced ventromedians. Spicules ventrally curved, about 1.3 anal body-width long. Prerectum about 2.5 anal body-widths long. Tail bluntly conoid, about one anal body-width long with a very distinct terminal caudal pore.

Type habitat and locality: Soil around roots of mosses and grasses from Govindghat, district Chamoli, Uttar Pradesh.

Type specimens: Collected in October 1979; holotype female on slide Xylencholaimus parateres n. sp./1; paratype females and male on slides Xylencholaimus parateres n. sp/2-3.

Differential diagnosis: Xylencholaimus parateres n. sp. comes close to X. teres Thorne, 1939 and X. viduus Jairajpuri, 1965

but differs from the former in having a longer body, smaller oesophagus, longer tail, in the shape of spicules and in having a well developed caudal pore (L = 1.0 mm; b = 4.7; c = 63; spicules delicate in T. tarna). From T. vishnu it can be differentiated in having a shorter body, in the shape of lip region, smaller odontostyle and posteriorly located vulva (L = 1.4-1.8 mm; odontostyle = 17 um; V = 50-52 in T. vishnu).

TYLENCHORHYNCHUS AQUATICUS N. SP.
(Fig. 32)

Dimensions:

Paratype females (10): L = 0.53-0.61 mm; a = 28-33; b = 3.8-4.3; c = 32-37; V = 44-45; G_2 = 12-21; odontostyle = 7-8 um; odontophore = 8-9 um; oesophagus = 136-142 um; prerectum = 33-45 um; rectum = 12-15 um; tail = 15-18 um; ABD = 12-14 um.

Holotype female: L = 0.53 mm; a = 31; b = 3.9; c = 33; V = 42; G_2 = 15; odontostyle = 7 um; odontophore = 8 um; oesophagus = 135 um; prerectum = 30 um; rectum = 15 um; tail = 16 um; ABD = 12 um.

Description:

Female: Body ventrally curved upon fixation. Cuticle and subcuticle finely striated. Lateral chords about one-third

of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region cap-like, offset from body, 7-8 um or about half of body-width at base of oesophagus. Lips angular, labial papillae elevated. Amphids stirrup-shaped, their apertures occupying about two-third of lip-width. Odontostyle small, dorylaimoid about one lip-width long, its aperture about one-third of its length. Guiding ring single, 4-5 um or about half lip-width from anterior end. Odontophore rod-like with small knobs at its base, 1.0-1.3 times the odontostyle length. Nerve ring encircles the anterior slender part of oesophagus at 56-62 um from anterior end. Basal expanded portion of oesophagus occupying about 32-37% of total oesophageal length. Cardia hemispherical, 6-7 um long. Location of oesophageal gland nuclei and their orifices as given in Table - I.

Reproductive system mono-opisthodelphic. Vulva transverse, vagina about one-third of corresponding body-width. Anterior uterine sac completely absent. Prerectum 2-3 anal body-widths long. Rectum about one anal body-width long. Tail hemispherical 1.2-1.5 anal body-widths long with one or two caudal pores on each side.

Male: Not found.

Type habitat and locality: Soil around roots of paddy, Oryza sativa L., from Aglali, district Ahmedabad, Gujarat state.

Type specimens: Collected in October 1978; holotype on slide *Tylencholaimus aquaticus* n. sp./1; paratypes on slides *Tylencholaimus aquaticus* n. sp./2-5.

Differential diagnosis: *Tylencholaimus aquaticus* n. sp. comes close to *T. pakistanensis* Firm , 1964 and *T. masai* Yeates, 1979. From the former it differs in having a long and slender body, shorter oesophagus, and a shorter and differently shaped tail (L = 0.42-0.50 mm; a = 18-19; b = 3.4-3.7; c = 31-32; tail sub-conoid in *T. pakistanensis*). From *T. masai* it differs in having anteriorly located vulva, and in the shape of tail (V = 54-57 in *T. masai*).

GENUS *CHITINOCDIUS* FURSTENBERG & HEYNS, 1966

The genus *Chitinocdius* was proposed by Furstenberg & Heyns (1966) first as *Chitinocdia* with *C. transvaalensis* as its type species, but they later changed it to *Chitinocdius* in the same year when it was revealed that *Chitinocdia* was pre-occupied. Sauer (1969) added another species *C. fuscus* to this genus, but this species possesses a smaller odontostyle and has transverse vulva and five spaced ventromedian supplements as in species of *Tylencholaimus*. After the report of male of *Chitinocdius transvaalensis* by Monteiro (1970), it appears quite logical to transfer *C. fuscus* to *Tylencholaimus* because of the nature and arrangement of ventromedian supplements as well as other characters. Bagri (1980) added one more species, *C. seshadrii* to this genus from Tamil Nadu, India, based on females only. During the present work, a single male and a number of females of *C. seshadrii* were collected also from Tamil Nadu. The male is similar in basic features to the one described for *C. transvaalensis* and hence also confirms the transfer of *C. fuscus* from *Chitinocdius* to *Tylencholaimus*.

The study of present material of *Chitinocdius seshadrii* shows that Bagri's description of this species needs elaboration. Further, the male has been reported for the first time. It was therefore considered desirable to give detailed descriptions of both the sexes of this species.

Diagnosis: Cuticle with prominent radial dots. Lip region offset by a deep constriction, prominent cap-like, lips rounded, papillae slightly elevated. Odontostyle long, attenuated with small aperture. Odontophore long, rod-like. Guiding ring single. Oesophagus with fairly large basal expanded part. Female reproductive system amphidelphic. Vulva longitudinal, vagina thick-walled, distally fringed. Males with dorylaimoid spicules, lateral guiding pieces and irregularly spaced ventromedian supplements. Tails short,conoid with bluntly rounded terminus, similar in both sexes.

Type species: Chitinodius transvaalensis Furstenberg & Heyns, 1966

Other species: C. seshadrii Baqri, 1980

CHITINODIUS SESHADRII BAQRI, 1980
(Fig. 33)

Dimensions:

Females (5): L = 1.55-2.06 mm; a = 43-48; b = 4.6-5.8; c = 66-74; V = 50-54; G_1 = 10-14; G_2 = 10-15; odontostyle = 31-34 um; odontophore = 22-24 um; oesophagus = 335-355 um; prerectum = 115-160 um; rectum = 30-40 um; tail = 22-29 um; ABD = 33-36 um.

Male: L = 1.71 mm; a = 36; b = 4.9; c = 63; V = 58; odontostyle = 33 um; odontophore = 24 um; oesophagus = 345 um; spicules = 43 um; lateral guiding pieces = 17 um; ventromedian supplements = 8; rectum = 39 um; tail = 27 um; ABD = 37 um.

Description:

Female: Body ventrally curved upon fixation. Cuticle finely striated, outer layer smooth, inner layer loose, 4-5 um thick at midbody and 7 um at tail. Lateral chords about one-fourth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region distinctly set off from body contour, cap-like, 13-14 um wide or about one-third of body-width at base of oesophagus. Amphids cup-shaped, their apertures 9-10 um or about two-third of lip-width. Odontostyle 2.4-2.5 lip- widths long, its aperture 5 um or about one-sixth of its length. Guiding ring at 17-18 um from anterior end. Odontophore rod-like, 0.6-0.7 times the odontostyle length. Anterior slender part of oesophagus narrows below the ellipsoidal swelling and expands above the nerve ring. It again narrows until it expands again to form the basal expended portion. Nerve ring at 115-120 um from anterior end. Basal expanded portion of oesophagus occupying about 50-52% of total oesophageal length. Cardia hemispherical. Location of oesophageal gland nuclei and their orifices as given in Table - I.

Reproductive system amphidelphic. Vulva longitudinal, vagina 16-18 um or about half of the corresponding body-width long. Distinct sphincter present at oviduct-uterus junction. Prerectum 3-4 anal body-widths long. Rectum about one anal body-width long. Tail short, convex-conoid, 0.6-0.8 anal body-width long with two caudal pores on each side.

Male: Supplements an adanal pair and eight irregularly spaced ventromedians. Spicules slightly longer than anal body-width. Rectum about one anal body-width long. Tail short, conoid with a bluntly rounded terminus, about 0.7 anal body-width long with two caudal pores on each side.

Habitat and locality: Soil around roots of coconut, Cocos nucifera L., from district Madras, Tamil Nadu.

Remarks: Chitwoodius seshadrii Baqri, 1980 was described from district Salem, Tamil Nadu. The females of the present material conforms well with those described by Baqri (1980) except that these have a narrower body and slightly longer odontostyle (a = 28-31 um; odontostyle = 25-29 um in the type specimens). Baqri (1980) while describing the species has mentioned that vulva is a transverse slit, but the study of the material loaned by him clearly revealed that these also have a longitudinal vulva instead of transverse.

Genus Xiphinemella Loos, 1950

Loos (1950) proposed the genus Xiphinemella, based on the presence of a labial disc, stomal sclerotisation, thin attenuated odontostyle, long and flanged odontophore, an offset oesophageal bulb and cuticle with crenate longitudinal folds, and designated X. cmarra (Loos, 1949) as its type. Chitwood(1957) added one more species, X. sasseri to this genus. Heyns (1963) proposed the genus Botalium with B. avarum as its type species and differentiated it from Xiphinemella mainly in the absence of labial sclerotisation, presence of excretory pore and anteriorly located guiding ring. Siddiqi (1966) synonymised Botalium with Xiphinemella and transferred B. avarum to Xiphinemella. Siddiqi & Hunain (1968) added one more species, X. utahnemacea from Madras, Tamil Nadu and also provided a key to the species.

In the present work, specimens of Xiphinemella were found in the soil samples collected from Bangalore, Karnataka state. Upon detailed study it was found that the present specimens did not fit under any of the known species of the genus and hence a new species is proposed for their reception.

Diagnosis: Moderate sized nematodes, usually 1.0-3.0 mm long with robust body. Cuticle apparently smooth, subcuticle with coarse transverse striations; longitudinal 'wings' may appear

on entire length of body. Lateral chords prominent. Excretory pore may or may not be present. Lip region cap-like, set off by a constriction and provided with a prominent labial disc. Stoma wall with or without sclerotization. Odontostyle long, attenuated with a minute aperture; odontophore with very prominent basal flanges. Guiding ring usually appearing double. Basal oesophageal enlargement short, cylindroid, offset. Female reproductive system amphidelphic; vulva transverse. Males with dorylaimoid spicules, lateral guiding pieces and spaced ventromedian supplements. Tails short, rounded, similar in both sexes.

Type species: Xiphinemella ornata (Loos, 1949) Loos, 1950

Other species: X. andrassyi n. sp.
X. asiatica Chitwood, 1957
X. cyatha (Hoyne, 1963) Siddiqi, 1966
X. utahnensis Siddiqi & Husain, 1968

XIPHINEMELLA ANDRASSYI N. SP.
(Fig. 34)

Dimensions:

Paratype females (4): L = 1.59-1.74 mm; a = 30-47; b = 6.3-6.5; c = 61-62; V = 44-47; G_1 = 13-14; G_2 = 13-15; odontostyle = 31-33 um; odontophore = 29-31 um; oesophagus =

246–269 um; prorectum = 210 um; rectum = 30–35 um; tail = 26–28 um; ABD = 31–33 um.

Holotype female: L = 1.80 mm; a = 38; b = 6.6; c = 55; V = 46; G_1 = 14; G_2 = 15; odontostyle = 33 um; odontophore = 31 um; oesophagus = 269 um; rectum = 32 um; tail = 33 um; ABD = 34 um.

Paratype males (5): L = 1.67–1.90 mm; a = 42–45; b = 6.5–6.8; c = 52–60; T = 59–67; odontostyle = 31–33 um; odontophore = 29–30 um; oesophagus = 244–287 um; spicules = 37–42 um; lateral guiding pieces = 13–14 um; ventromedian supplements = 7–9; tail = 29–33 um; ABD = 33–36 um.

Description:

Female: Body slightly ventrally curved upon fixation. Cuticle smooth; subcuticle wavy, irregular and appears coarsely striated. Hypodermis prominent, also irregular. Lateral chords prominent about one-third of body-width at midbody.

Lip region offset from body by a constriction, with slightly raised, rounded lips and a large labial disc. Amphids cup-shaped, their apertures 7–8 um or about half of the lip-width. Odontostyle attenuated, about two lip-widths long with a very small aperture. Guiding ring single, 28–30 um or about two lip-widths from anterior end. Odontophore rod-like slightly less than odontostyle length, with prominent flanges at its base

with inner core appearing sclerotised. Nerve ring encircles the anterior slender part of oesophagus at 106-119 um from anterior end. Basal bulb measuring 55-65 um long or about 20-23% of total oesophageal length. Cardia small, 8-10 um long. Oesophageal gland nuclei and their orifices as given in Table I.

Reproductive system amphidelphic. Vulva a transverse slit, vagina thick-walled extending about one-third of corresponding body-width. Prerectum about six anal body-widths long. Rectum about one anal body-width long. Tail short conoid, bluntly rounded, slightly less than one anal body-width long.

Male: Supplements an adanal pair and 7-9 irregularly spaced ventromedians. Spicules arcuate about one anal body-width long. Lateral guiding pieces about one-third of spicules length. Tail short, conoid, slightly less than one anal body-width long.

Type habitat and locality: Soil around roots of wild tree from Ulsoore, district Bangalore, Karnataka state.

Type specimens: Collected in September 1980; holotype female and a paratype male on slide Xiphinemella andrassyi n. sp./1; other paratype males and females on slides Xiphinemella andrassyi n. sp./2-4.

Differential diagnosis: Xiphinemella andrassyi n. sp. comes close to X. sasseri Chitwood, 1957; X. smarae (Heyns, 1963) Siddiqi, 1966 and X. utahnemacea Siddiqi & Husain, 1968. From the former it differs in having smaller body, and smaller combined odontostyle and odontophore length (L = 2.4-3.5 mm; odontostyle + odontophore = 72-75 um in X. sasseri). From X. smarae it differs in having longer body, non-everted amphids, more posteriorly located guiding ring, shorter oesophagus and in the anterior location of vulva (L = 1.37 mm; b = 5.5; V = 56; amphids everted in X. smarae). From X. utahnemacea it differs in having very poorly developed labial sclerotization; longer odontophore and oesophagus, in anterior location of vulva and in having a longer tail (Labial sclerotization well developed odontophore = 22 um; b = 7.4; c = 80; V = 50 in X.utahnemacea).

The new species has been named in honour of Dr. I. Andrassy in recognition of his extensive and valuable work on the dorylaim nematodes of the world.

GENUS NEOMETADORYLAIMUS N. GEN.

Jairajpuri & Goodey (1966) proposed the genus Metadorylaimus with M. pachylaimus as its type species. Ali et al. (1971) added one more species, M. ommanai from Maharashtra, India. Andrássy (1976) established a new subfamily Metadorylaiminae for Metadorylaimus and placed it under the family Qudsianematidae. In the present work specimens of M. ommanai were obtained from a soil sample collected in Ahmedabad. A study of these specimens and its comparison with the type material of M. pachylaimus (both adults and juveniles) in the collection of this Department, clearly reveals many important differences between these two species, particularly in the characters of odontostyle, ellipsoidal swelling beneath the odontophore, vulva, etc., and warrants the erection of a new closely related genus, Neometadorylaimus.

The placing of these genera under Qudsianematidae also does not appear to be correct because of the shape of lip region, structure of oesophagus and the presence of radial striae, all of which indicate tylencholaimid affinities and hence these two genera are transferred to the family Tylencholaimidae.

Diagnosis: Body long and robust. Lip region knob-like. Odontostyle conspicuous, thick-walled, in ventral view its sides prominently forked at the base, aperture one-third of its length.

Odontophore simple rod-like. Ellipsoidal swelling continuous with the anterior slender part of oesophagus. Intestine forming a blind sac over the dorsal side of basal expanded part of oesophagus. Female reproductive system amphidelphic. Vulva longitudinal. Tail short, convex-conoid. Male unknown.

Type and only species: Nemmatadorylaimus coomansi (Ali et al., 1971) n. comb.

Relationship: Nemmatadorylaimus differs from Metadorylaimus in the shape of odontostyle which is much less robust and has a large aperture which is about one-third of its length (odontostyle massive, with thick walls, aperture one-eighth of its length in Metadorylaimus) in the absence of 'mucro' in the oesophagus, ellipsoidal swelling continuous with the anterior slender part of oesophagus (ellipsoidal swelling closely set off from the anterior slender part of oesophagus and forming an ellipsoidal chamber in Metadorylaimus), intestine forming a blind sac over the dorsal side of oesophagus and in having a longitudinal vulva (blind sac absent in adults, and a very small sac in juveniles may be present and the vulva is transverse in Metadorylaimus).

[illegible] (Ali Et Al., 1971) n. comb.
(Fig. 35)

Dimensions:

Females (4): L = 2.20-2.79 mm; a = 40-43; b = 4.1-4.5; c = 81-100; V = 57-59; c_1 = 11-14; c_2 = 9-16; odontostyle = 22-23 um; odontophore = 20-21 um; oesophagus = 537-577 um; prerectum = 76-114 um; rectum = 33-34 um; tail = 27-29 um; ABD = 36-43 um.

Description:

Female: Body slightly ventrally arcuate upon fixation, tapering slightly towards extremities. Cuticle finely striated. Lateral chords about one-third of body-width at midbody. Lateral dorsal and ventral body pores indistinct.

Lip region offset from the body by a deep constriction, 21-22 um or about one-third of body-width at base of oesophagus. Amphids stirrup-shaped, their apertures 10-13 um or about half of the corresponding body-width. Odontostyle dorylaimoid with thick walls, about one lip-width long, its aperture about one-third of its length. Guiding ring simple, 16-17 um or 0.7-0.8 lip-width from anterior end. Odontophore simple, rod-like, slightly smaller than odontostyle length. Nerve ring encircles the anterior slender part of oesophagus at 123-132 um from anterior end. Basal expanded portion of oesophagus occupying about 57-60% of total oesophageal length. Cardia in two parts,

a thick and wide anterior part with a distinct lumen and a smaller and narrower posterior part. The intestine forming a blind sac towards the dorsal side of oesophagus, about half of the corresponding body-width long. Location of oesophageal gland nuclei and their orifices as given in Table I.

Reproductive system amphidelphic. Vulva longitudinal, vagina thick-walled, about half of the corresponding body-width long. Prerectum 2-3 anal body-widths long. Rectum about one anal body-width long. Tail convex-conoid, 0.7-0.8 anal body-width long with one or two caudal pores on each side.

Male: Not found.

Habitat and locality: Soil around roots of mango, Mangifera indica L., from Aglali, district Ahmedabad, Gujarat state.

SUBORDER MYCOLAIMINA AHMAD & JAIRAJPURI, 1979

Diagnosis: Mural tooth present, subventrally or subdorsally located on the wall of pharynx. Stoma simple or sclerotised. Oesophagus with an anterior slender part and an expended basal portion. Three cardiac glands usually present at junction of oesophagus and intestine. Female reproductive system amphidelphic, rarely mono-opisthodelphic. Vulva transverse, rarely longitudinal. Males with ventromedian supplements and a paired spicules. Tails similar in both sexes.

Type superfamily: Mygolaimoidea De Coninck, 1965

Other superfamily: Campydoroidea Jairajpuri, Ahmad & Bajaj,1976

SUPERFAMILY MYCOLAIMOIDEA DE CONINCK, 1965

Diagnosis: Mural tooth on left subventral wall of pharynx. Pharynx eversible, in three sections, viz., distal, median and proximal. Median and proximal (basal) parts thick-walled; distal part (vestibulum) thin-walled. Oesophagus with an anterior slender part and an expanded basal portion. Basal expanded part of oesophagus may rarely be bibulbar and is usually enclosed in a thin or a conspicuous sheath forming basal pockets. Three cardiac glands or a cardiac disc present at the junction of oesophagus and intestine. Female reproductive system amphidelphic,

rarely mono-opisthodelphic. Vulva transverse, rarely longitudinal. Males with generally massive spicules, and spaced ventromedian supplements, gubernaculum present or absent. Tails variable in shape and size, similar in both sexes.

Type family: Mygolaimidae Thorne, 1935 (Meyl, 1961)

Other families: Mygeliidae Jairajpuri, 1964
Actholaimidae Jairajpuri, 1965 (Andrássy, 1976)
Mygolaimeliidae Clark, 1961 (Siddiqi, 1968)

KEY TO THE FAMILIAL GROUPS OF MYGOLAIMINA

1. Dural tooth subdorsally located on the wall of pharynx; basal part of oesophagus small with a well developed triquetrous chamber ..... Campydoroidea, Campydoridae
Dural tooth subventrally located on the wall of pharynx basal expanded part of oesophagus long without triquetrous chamber ..... Mygolaimoidea 2

2. Female reproductive system mono-opisthodelphic .....
..... Mygeliidae
Female reproductive system amphidelphic 3

3. Stoma sclerotised ..... Actholaimidae
Stoma not sclerotised 4

4. Cuticle very thick; basal expanded part of oesophagus about two-third of oesophageal length; cardiac disc may be present ..... Nygolaimellidae

Cuticle relatively thin; basal expanded part of oesophagus about half of oesophageal length; cardiac gland present ... . Nygolaimidae

FAMILY MYCOLAIMELLIDAE CLARK, 1961 (SIDDIQI, 1968)

Diagnosis: Cuticle moderately thick with distinct lateral pores. Lip region continuous or distinctly set off by a constriction, often wider than adjoining body. Dural tooth deltoid, located on left subventral wall of pharynx. Stoma simple. Pharynx eversible, in three sections and with thickened walls, rarely with a rasp-like area. Basal expanded part of oesophagus comparatively longer, bibulber, enclosed in a thin to moderately developed sheath. Cardiac disc present at junction of oesophagus and intestine. Cardia rounded or bluntly conoid. Female reproductive system amphidelphic. Vulva transverse. Males with well developed ventromedian supplements and lateral guiding pieces. Gubernaculum absent. Spicules with lateral apical thickenings. Tails conoids, similar in both sexes.

Type subfamily: Mycolaimellinae Clark, 1961

Other subfamily: Mycolaiminae Andrássy, 1976.

SUBFAMILY MYCOLAIMELLINAE CLARK, 1961

Diagnosis: Lip region distinctly set off and wider than adjoining body. Dural tooth deltoid. Pharynx eversible in three sections with thickened walls. Basal expanded part of oesophagus bibulber, occupying about two-third of oesophageal

length. Female reproductive system amphidelphic. Vulva transverse. Males with well developed spicules, ventromedian supplements and lateral guiding pieces. Tails short, conoid, similar in both sexes.

Type genus: Hycolaimellus Loos, 1949

Other genera: Anoncolaimoides Heyns, 1965
Scanidens Heyns, 1965

KEY TO THE SUBFAMILIES AND GENERA OF HYCOLAIMELLIDAE

1. Pharynx with a rasp-like area of minute denticles .....
.....Hycolaimiinae, Hycolaimium
Pharynx without a rasp-like area ..... Hycolaimellinae 2

2. Basal expanded part of oesophagus bibulbar; cardiac disc present ..... Hycolaimellus
Basal expanded part of oesophagus simple; cardiac disc absent 3

3. Dural tooth dorylaimoid, long with a dorsal aperture .....
..... Anoncolaimoides
Dural tooth small, without dorsal aperture .....
..... Scanidens

GENUS *MYCOLAIMELLUS* LOOS, 1949

Loos (1949) established the genus *Mycolaimellus* mainly on the peculiar structure of oesophagus, in which the basal expanded part was constricted in the middle and made up of three sections of different texture, and designated *M. obscurus* as its type. Andrássy (1962) described *M. cantivitatus*, which was later excluded from the genus by Heyns (1968) because of its small size, type of oesophagus and presence of cardiac glands. Heyns (1968) added four more species and also provided a key to the species.

In the present work specimens of *Mycolaimellus* were obtained in the soil samples collected from Bangalore, Karnataka state. Upon detailed study they were found to represent a new species. This being also the first report of the genus from India.

Diagnosis: Body 2.5–6.0 mm long. Cuticle thickened, specially towards the tail, finely transversely striated. Lip region distinctly set off by constriction, wider than adjoining body. Tooth deltoid, smaller or longer than the lip-width. Pharynx mycolaimoid. Oesophagus with the basal expanded part usually occupying two-third of its length. Basal expanded part consisting of three sections, the first and second of which are often separated by a constriction. Middle and basal sections of the

enlarged part surrounded by a sheath. Cardiac disc present. Female reproductive system amphidelphic. Vulva transverse. Males with well developed spicules, lateral guiding pieces and a series of spaced ventromedian supplements. Tails short conoid, similar in both sexes.

Type species: Mylolaimalius abnormis Loos, 1949

Other species: M. heynsi n. sp.

M. heynsi Heyns, 1968

M. macracus Heyns, 1968

M. rectalus Heyns, 1968

M. quintus Heyns, 1968

MYLOLAIMALIUS HEYNSI N. SP.
(Fig. 36)

Dimensions:

Paratype females (3): L = 2.96-3.29 mm; a = 58-61; b = 4.1-4.3; c = 59-65; V = 53-55; G_1 = 7-13; G_2 = 6-9; tooth = 10-11 um; oesophagus = 706-764 um; prerectum = 46-50 um; rectum = 46-49 um; tail = 49-56 um; ABD = 34-39 um.

Holotype female: L = 3.01 mm; a = 68; b = 4.1; c = 60; V = 54; G_1 = 8; G_2 = 8; tooth = 10 um; oesophagus = 721 um; prerectum = 49 um; rectum = 41 um; tail = 50 um; ABD = 31 um.

Description:

Female: Body slightly ventrally curved upon fixation. Cuticle finely striated, 2-3 um thick at midbody and 6-7 um on tail. Lateral chords about one-sixth of body-width at midbody.

Lip region offset by deep constriction, wider than the adjoining body, 15-17 um wide or about one-third of body-width at base of oesophagus. Lips angular. Amphids stirrup-shaped, their apertures about half lip-width wide. Tooth deltoid, about two-third of lip-width long. Base of pharynx indistinct, merging gradually into the lumen of oesophagus. Nerve ring encircles the anterior slender part of oesophagus at 123-140 um from anterior end. A distinct cardiac disc present at base of oesophagus. Cardia hemispheroid.

Reproductive system amphidelphic. Vulva transverse, vagina thick-walled extending about half of the corresponding body-width. Prerectum 1.2-1.6 anal body-widths long. Rectum 1.2-1.4 anal body-width long. Tail dorsally convex-conoid, 1.3-1.6 anal body-widths long with one or two caudal pores on each side.

Male: Not found.

Type habitat and locality: Soil around roots of mango, Mangifera indica L., from Bengalore, Karnataka state.

Type specimens: Collected in September 1980; holotype on slide Mylonchulus heynai n.sp./1; paratypes on slides Mylonchulus heynai n. sp./2-4;

Differential diagnosis: Mylonchulus heynai n. sp. comes close to M. abnormis Coomans, 1969 and M. heynsi Heyns, 1968 but differs from the former in having a cuticularized guiding ring, smaller tooth, prerectum and tail (tooth = 15-17 um; c = 43-45; prerectum 1.9-2.2 anal body-widths long in M. abnormis). From M. heynsi it differs in having a slightly shorter body, cuticularized guiding ring, smaller tooth, and an abrupt conspicuous constriction between the two parts of basal expanded part of oesophagus (L = 3.55-3.93 mm; tooth = 18-19um; constriction between the first and second parts of basal expanded part not abrupt in M. heynsi).

The new species is named after Dr. J. Heyns who has done valuable work on dorylaims.

SUMMARY

A survey of soil-inhabiting nematodes from the Indian states of Uttar Pradesh, Bihar, West Bengal, Orissa, Manipur, Gujarat, Himachal Pradesh, Tamil Nadu, Karnataka and Kerala and also from Nepal was conducted. A large number of species of the order Dorylaimida were obtained as a result of this survey. For the present work only those species were taken into account which were either new to science or recorded for the first time from India or for which males were found for the first time. In all, 54 species of dorylaims have been described. These are grouped under 4 superfamilies, 13 families and 18 subfamilies, representing 30 known and two new genera, 32 known and 22 new species. Diagnoses of all familial groups and genera under which species have been reported are provided. Identification keys to the familial groups and genera have also been provided.

I. The suborders:

1. Dorylaimina 2. Nygolaimina

II. The superfamilies:

1. Dorylaimoidea 2. Belondiroidea
3. Leptonchoidea 4. Nygolaimoidea

III. The families:

1. Dorylaimidae 2. Prodorylaimidae
3. Thornenematidae 4. Qudsianematidae

5. Nordiidae
6. Crateronematidae
7. Aporcelaimidae
8. Discolaimidae
9. Belondiridae
10. Anticlaimoididae
11. Dorylaimoididae
12. Tylencholaimidae
13. Mygolaimellidae

IV. The known subfamilies

1. Dorylaiminae
2. Pungodorylaiminae
3. Laimydorinae
4. Afrodorylaiminae
5. Prodorylaiminae
6. Amphidorylaiminae
7. Thornenematinae
8. Cephalodorylaiminae
9. Crateronematinae
10. Mordellonematinae
11. Aporcelaiminae
12. Dorylaimoidinae
13. Calolaiminae
14. Tylencholaiminae
15. Xiphinemellinae
16. Metadorylaiminae
17. Mygolaimellinae

V. The new subfamily:

Enchocaliinae

VI. The known genera:

1. Dorylaimus
2. Laimydorus
3. Pungodorylaimus
4. Calodorylaimus
5. Brunsodorylaimus
6. Afrodorylaimus
7. Prodorylaimus
8. Prodorylaimium
9. Amphidorylaimus
10. Thornenema

11. Neirainuria
12. Ecumenicus
13. Labronema
14. Carbelodorylaimus
15. Crivenutus
16. Crateronema
17. Mandelionema
18. Paronemella
19. Amorcolaimellus
20. Discolaimus
21. Belondira
22. Axonchium
23. Adenolaimus
24. Dorylaimoides
25. Coronia
26. Calolaimus
27. Xylencholaimus
28. Chitwoodius
29. Xirhinemella
30. Aulolaimellus

VII. The new genera:

1. Goliathodorylaimus
2. Mesmatadorylaimus

VIII. The subgenera:

1. Axonchium
2. Heteraxonchium
3. Spanaxonchium

IX. The known species:

1. Dorylaimus stagnalis
2. Laimydorus pseudostagnalis
3. Mesodorylaimus elobicaps
4. Mesodorylaimus kreyni
5. Mesodorylaimus pseudosubtilis
6. Mesodorylaimus rusilius
7. Dreamodorylaimus sackeeni

8. Oxyprionchodorylaimus flexus
9. Prepatodorylaimus rapwicki
10. Afrodorylaimus geniculatus
11. Afrodorylaimium heliodemanus
12. Amphidorylaimus flagelliformis
13. Aporcelaimus asymmetricus
14. Acrumenicus pseudobasiri
15. Labronema mauritiense
16. Carbolodorylaimus papillatus
17. Crateronema aestivum
18. Mordellonema communis
19. Dorylaimella perifer
20. Paraporcelaimellus obscurus
21. Paraporcelaimellus laevis
22. Paraporcelaimellus asymmetricus
23. Pleurolaimus tenax
24. Halondira aecca
25. Eudorylaimus (Eudorylaimus) abernini
26. Eudorylaimus (Metaeudorylaimus) vaginatus
27. Adenolaimus orthus
28. Aylencholaimus paristanensis
29. Aylencholaimus parus
30. Aylencholaimus proximus
31. Chitinoidius sambadrii
32. Isomermadorylaimus communis

X. The new species:

1. Dorylaimus siddiqi
2. Calodorylaimus indicus
3. Epidorylaimus maqsoodi
4. Epidorylaimus caudatus
5. Epidorylaimus saccatus
6. Prodorylaimus obesus
7. Jairajpuria oryzae
8. Aetholaimus parvispinus
9. Aetholaimus paracanalis
10. Crivaeurus hastus
11. Aporcelaimellus begrii
12. Aporcelaimellus (Aporcelaimus) valium
13. Aporcelaimus (Metaporcelaimus) apiculus
14. Aporcelaimus (Aporcelaimus) tacitus
15. Dorylaimoides chamoliensis
16. Dorylaimoides kalincus
17. Eudorylaimus parvus
18. Calolaimus orchidius
19. Xylencholaimus aquaticus
20. Xylencholaimus parateres
21. Xiphinemella andrassyi
22. Mylonchulus brevis

XI. Taxa recorded for the first time:

1. Dracanodorylaimus flavus
2. Dracanodorylaimus zenzicki
3. Amphidorylaimus flacelliscauda
4. Thornenema cavalcantii
5. Aporcelaimellus scyloryctus
6. Cephalodorylaimus papillatus
7. Discolaimus tenax
8. Holondira secca
9. Axonchium (Axonchium) shamimi
10. Axonchium (Axonchium) vaginatum
11. Chitwoodius seshadrii

XII. The new combinations:

1. Criconemoides morbidus
2. Xylenchocolaimus fuscus
3. Nygolaimoides eroceanai

XIII. The nomen novum:

Mesodorylaimus paraecurvus

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TABLE - I

DIGITAL OF ODONTODIUM GLAND NUCLEI AND THEIR ORIFICES

SPECIES	DG	DN	DG-DN	S_1N_1	S_1B_2	S_2R	S_2O
Dorylaimus siddiqii n. sp.	58-60	59-61	1.8-2.3	76-79	80-83	90-92	92-93
Calodorylaimus indicus n. sp.	51-54	53-55	2.0-3.2	66-67	76-78	84-86	87-89
Prepanlodorylaimus flexus	50-52	51-53	1.5-2.3	65-67	70-72	78-79	80-82
Prepanodorylaimus zamicki	55-57	58-59	3.3-4.0	72-74	78-80	88-89	89-90
Opiathodorylaimus magnodi n.sp.	56-58	58-59	3.9-4.6	67-69	73-76	80-81	81-83
Opiathodorylaimus caudatus n.sp.	54-58	57-60	2.4-3.2	70-73	75-79	83-85	84-87
Opiathodorylaimus saccatus n.sp.	58-59	61-62	3.5-3.9	67-69	75-76	83-85	84-87
Afrodorylaimus geniculatus	59-61	60-64	1.9-2.6	73-76	79-81	87-89	89-91
Prodorylaimus obesus n. sp.	56-58	59-61	1.3-1.7	68-69	71-72	88-90	90-91
Ambidorylaimus flagellicauda	62-63	65-67	2.1-2.4	75-76	78-79	88-89	89-90
Thornenema cavalcantii	55-58	58-61	2.5-3.4	69-72	74-76	81-83	82-84
Jairajuria oryzae n. sp.	67-69	69-72	3.1-4.9	78-80	83-86	87-89	89-91

contd: .....

Table - I: ..... contd .....

Species	DL	DI	DI-DN	c_1b_1	c_1b_2	c_2N	c_2O
Scanonicus monohystera	63-64	65-67	2.1-2.9	70-73	77-80	85-87	87-89
Labronema nepalense n. sp.	52-53	55-57	3.5-4.2	64-67	69-71	82-84	84-87
Labronema pararenax n. sp.	55-57	58-61	3.5-4.2	70-73	76-78	83-85	84-87
Cephalobrylaimus papillatus	60-61	64-65	4.2-5.1	75-77	79-80	85-86	87-88
Eriverutus hastus n. sp.	59-61	66-67	8.7-8.5	73-75	81-82	92-93	93-95
Cratonema acutivum	56-57	58-60	3.2-3.6	68-69	73-74	93-94	94-95
Anaplectonchus acutivorus	53-56	56-59	3.3-4.2	67-69	75-78	83-85	85-87
Anaplectonchus bagrii n. sp.	56-58	61-64	6.1-6.9	68-71	76-79	90-92	91-93
Diplolaimus tenax	47-49	52-53	3.1-3.6	69-71	72-73	89-91	91-92
Malenchus sacca	67-68	69-70	2.9-3.2	81-82	83-84	92-93	93-94
Dorylaimoides chamoliensis n. sp.	76-77	78-79	2.5-2.7	82-84	86-87	90-91	90-92
Dorylaimoides kalincus n. sp.	70-82	81-83	1.6-1.9	87-88	88-89	94-95	95-96
Morsaia parva n. sp.	77-79	78-80	1.4-1.9	84-85	85-86	91-93	92-94

..... contd .....

TABLE – I: ..... contd .....

Species	DO	DN	DO–DN	S_1E_1	S_1N_2	S_2E	S_2O
Calolaimus amphidius n. sp.	75–77	76–77	1.1–1.5	84–86	86–87	92–93	92–94
Tylencholaimus paratetes n. sp.	64–65	66–67	3.5–3.7	76–77	79–81	89–91	92–93
Tylencholaimus aquaticus n. sp.	71–72	73–75	3.2–3.6	82–84	85–86	89–91	91–92
Chitwoodius seinhorsti	54–57	57–60	3.5–5.0	70–73	74–75	82–85	83–86
Xiphinemella andrassyi n. sp.	81–82	83–84	2.5–3.1	87–88	88–89	93–94	94–95
Eucmetadorylaimus coomansi	43–44	45–47	2.5–3.3	65–67	69–71	85–86	86–87

Fig. 1

Paryleimus siddiqii n. sp.

A - Entire female.

B - Entire male.

C - Anterior region.

D - Expanded part of oesophagus.

E - Cross section through midbody.

F - Female genital branch (anterior).

G - Female posterior region.

H - Male posterior region.

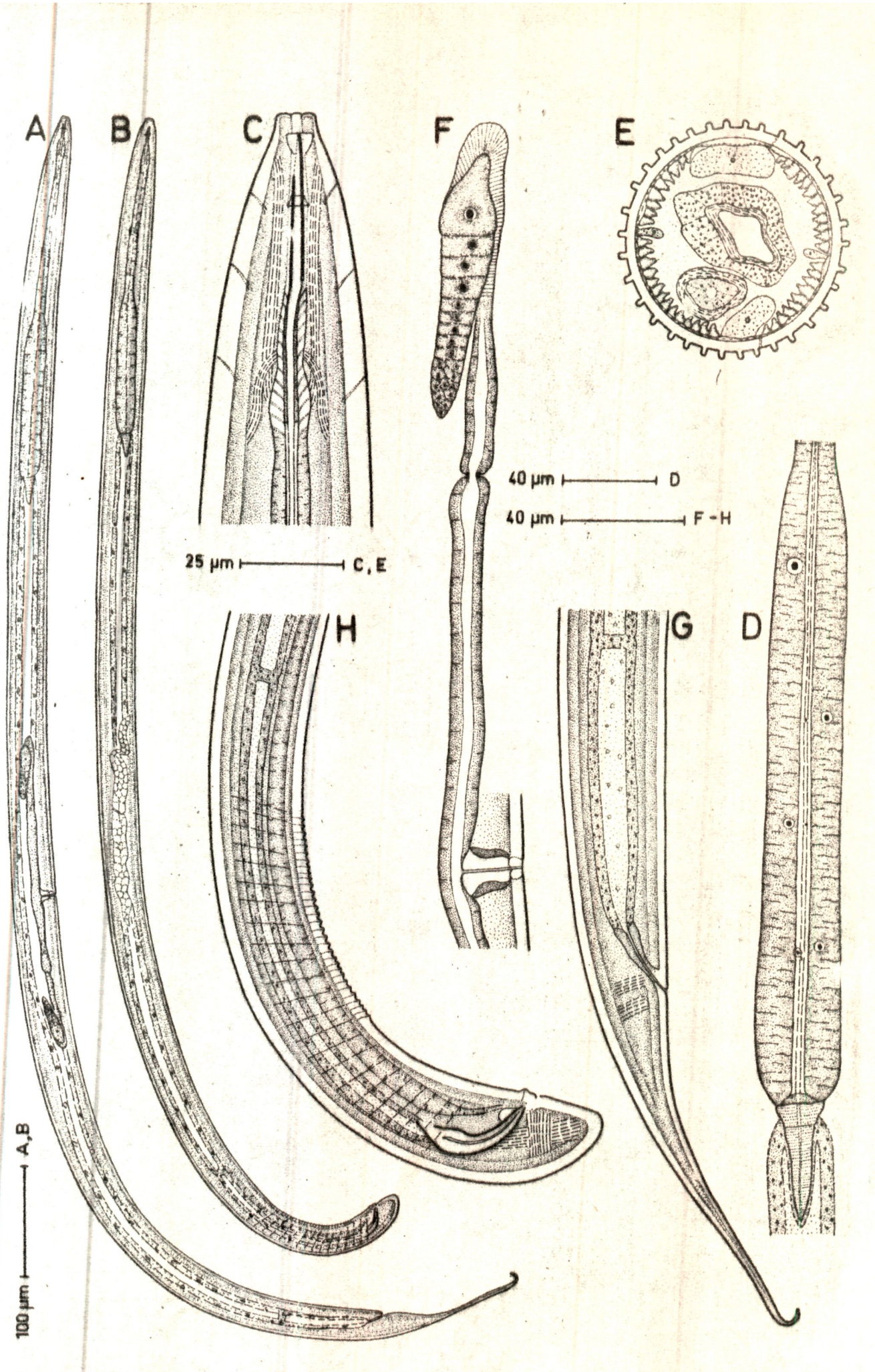

A
B
C
F
E
D
G
H
25 µm
C, E
40 µm
D
40 µm
F - H
100 µm
A, B

Fig. 2

Celoderyleimus indicus n. sp.

A - Anterior region,

B - Oesophageal region,

C - Female genital branch (anterior),

D - Vulval region,

E - Female posterior region,

F - Male posterior region,

G - Spicule.

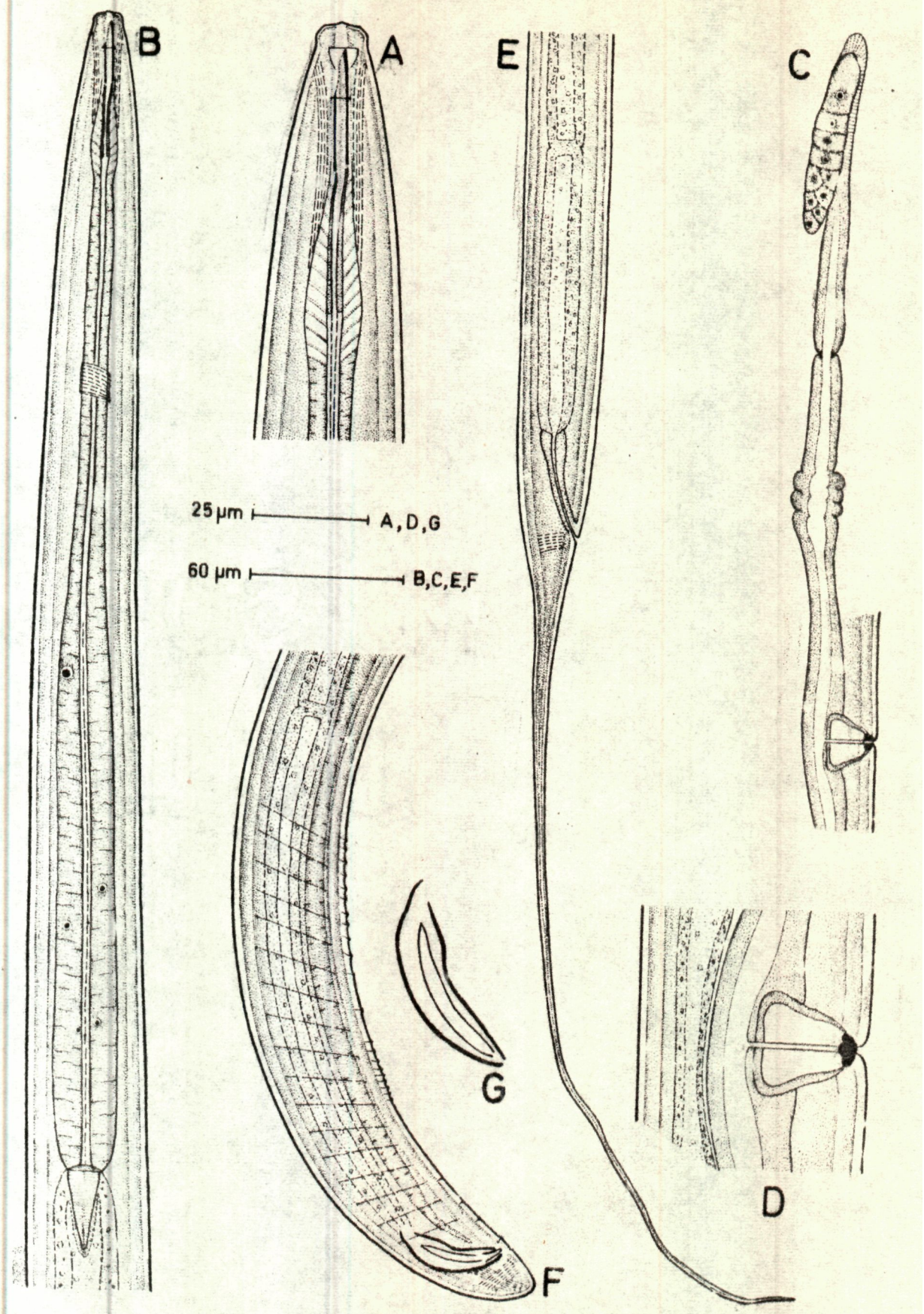

B
A
E
C
25 µm
A, D, G
60 µm
B, C, E, F
G
D
F

Fig. 3

A - D Prorenodorylaimus flexus

A - Anterior region.

B - Oesophageal region.

C - Male posterior region.

D - Spicule and lateral guiding piece.

E - H Prorenodorylaimus zenwicki

E - Anterior region.

F - Oesophageal region.

G - Female posterior region.

H - Male posterior region.

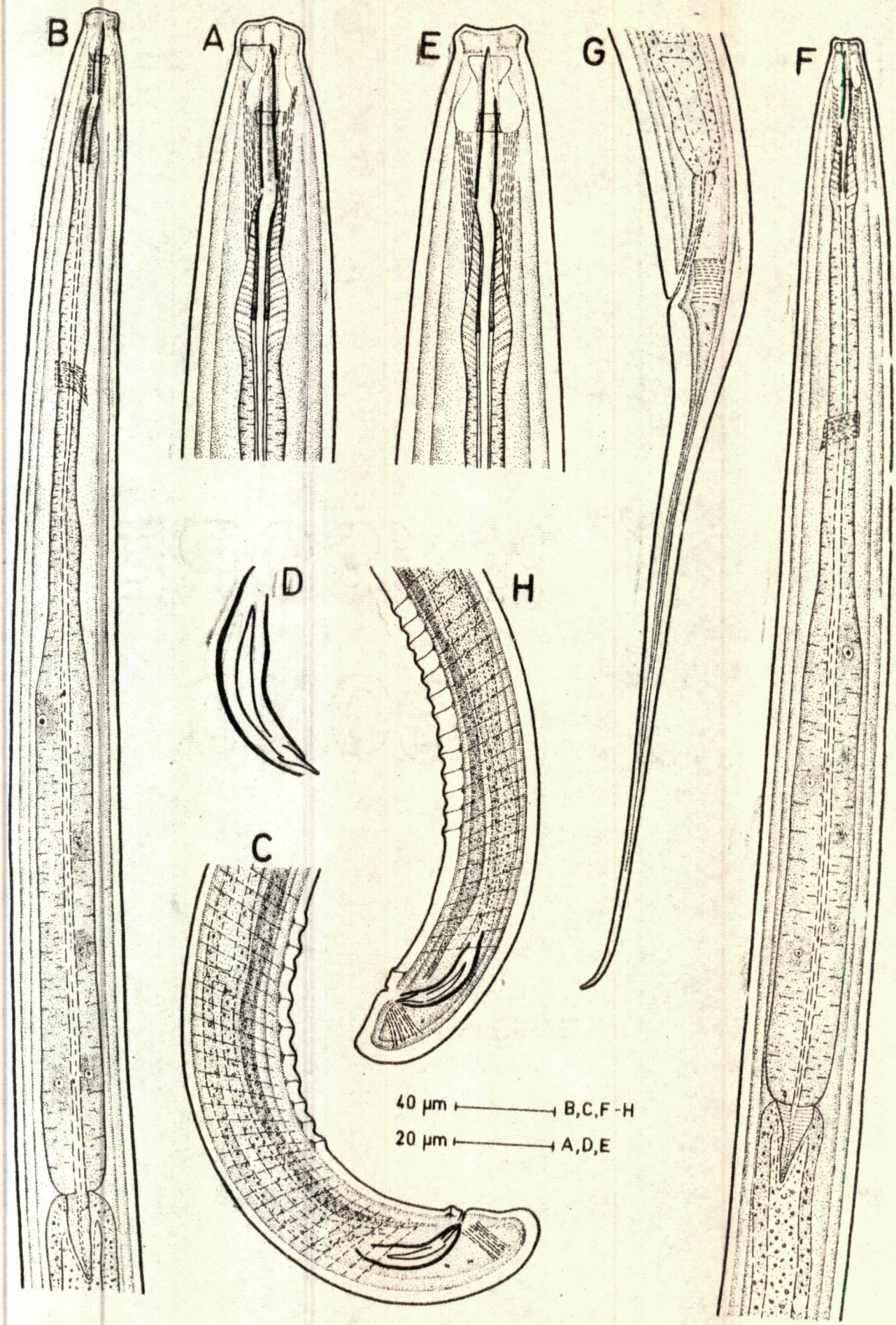

B
A
E
G
F
D
H
C
40 µm
B,C,F-H
20 µm
A,D,E

Fig. 4

Cristhedorylaimus meagcodi n. sp.

A - Entire female

B - Entire male.

C - Anterior region.

D - Anterior end showing amphid.

E - Oesophageal region.

F - Female gonad.

G - Vulval region (dorsoventral).

H - Female posterior region.

I - Male posterior

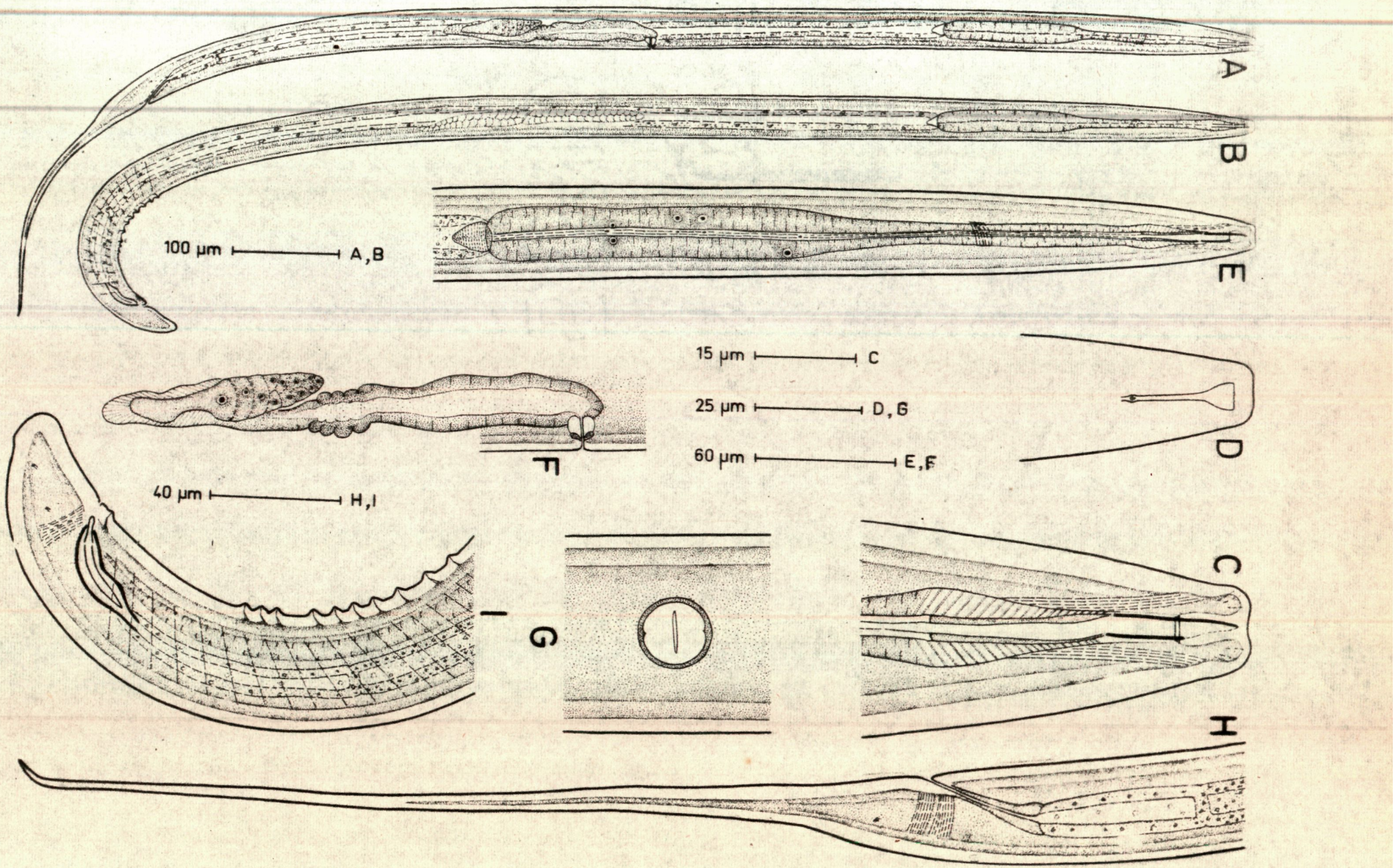

A
B
E
100 µm
A, B
15 µm
C
25 µm
D, G
60 µm
E, F
D
F
40 µm
H, I
G
C
H
I

Fig. 5

Opisthodorylaimus caudatus n. sp.

A - Entire female,

B - Anterior region,

C - Anterior region showing amphid,

D - Oesophageal region,

E - Female gonad,

F - Vulval region (dorsoventral),

G - Female posterior region.

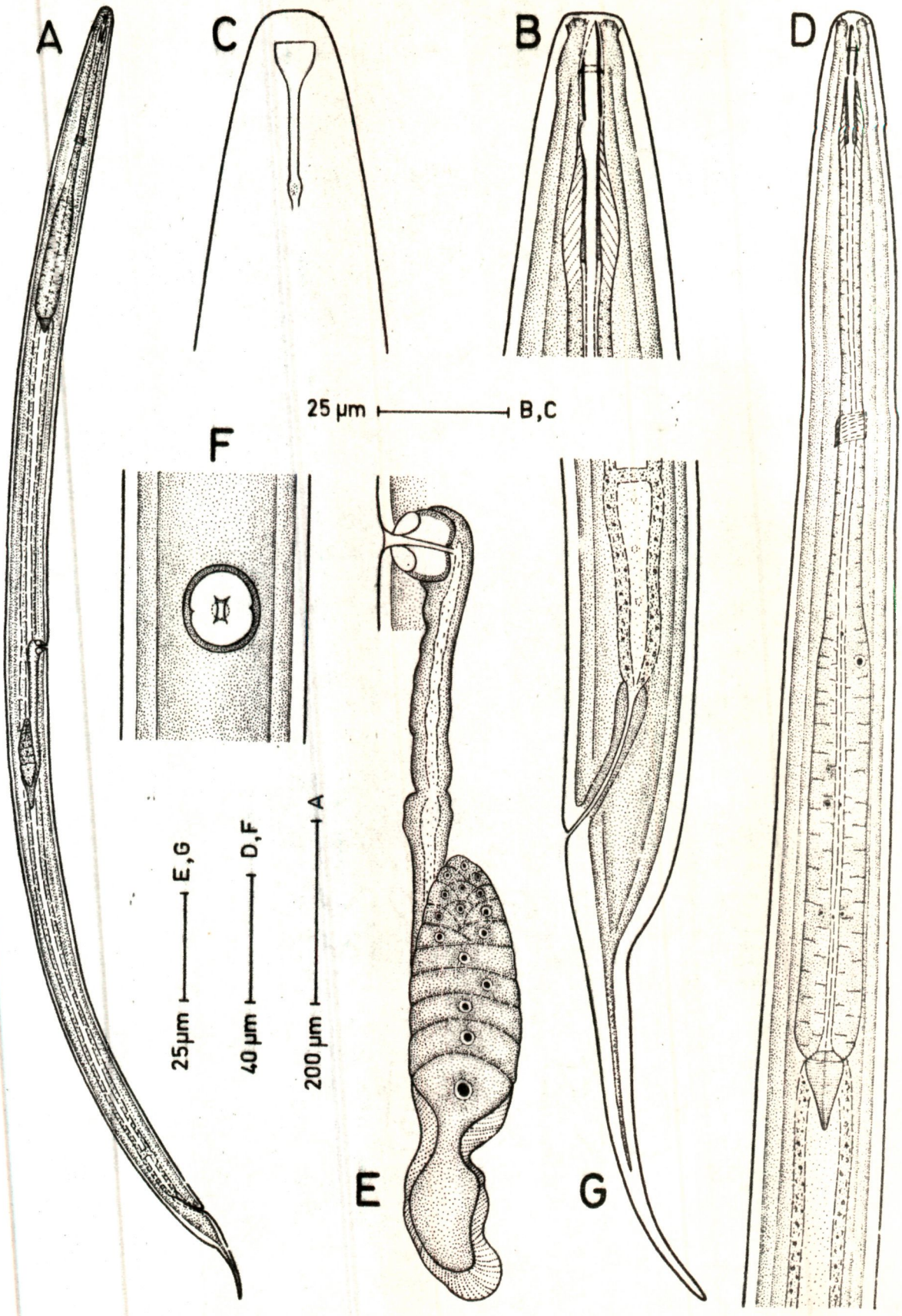

A
C
B
D
25 µm
B,C
F
E,G
D,F
A
25µm
40 µm
200 µm
E
G

Fig. 6

Orthodoryleimus saccatus n. sp.

A - Entire female.

B - Anterior region.

C - Oesophageal region.

D - Expended part of oesophagus.

E - Female gonad.

F - Vulval region

G - Female posterior region.

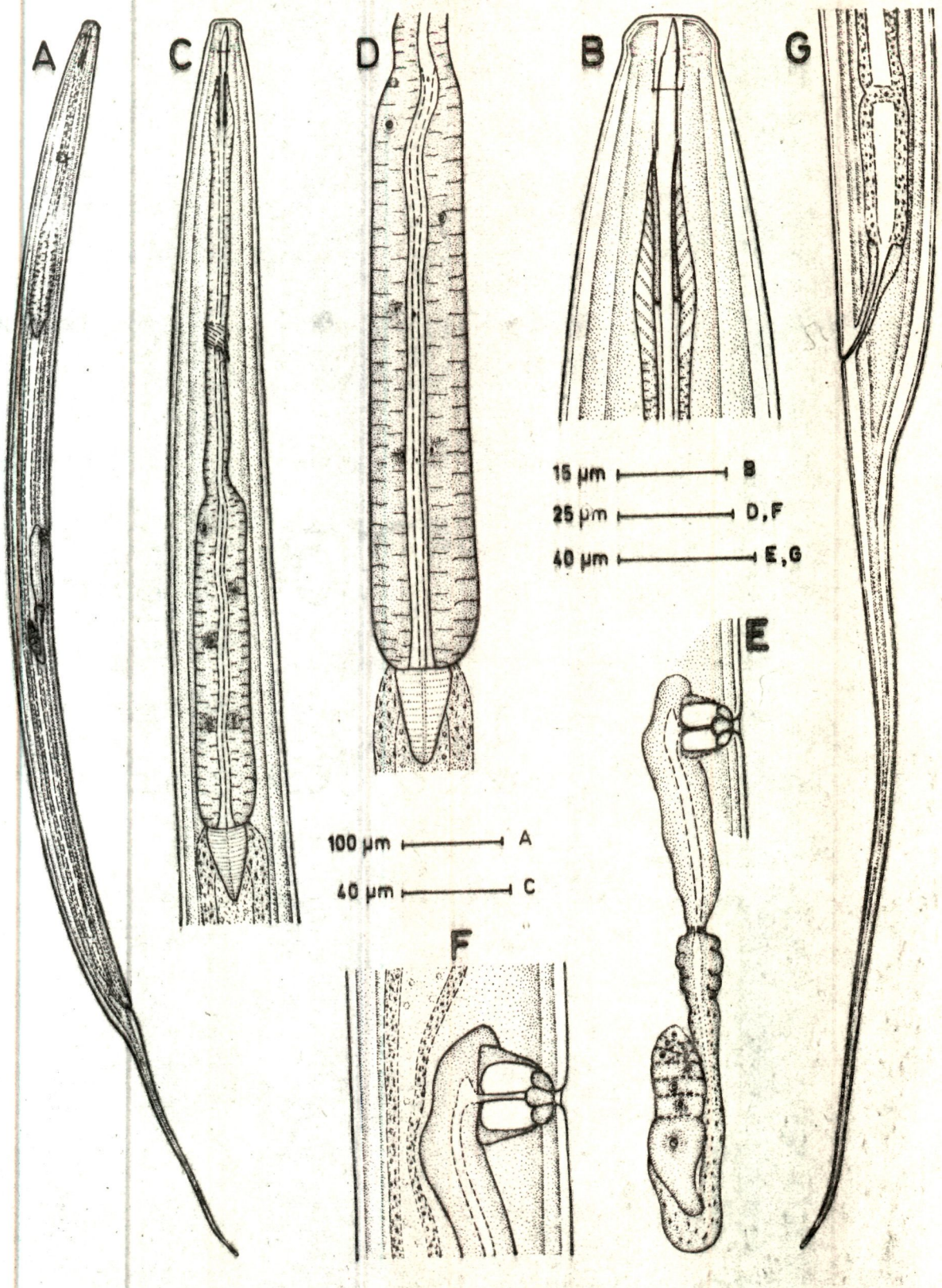

A
C
D
B
G
15 µm B
25 µm D, F
40 µm E, G
E
100 µm A
40 µm C
F

Fig. 7

Afrodorylaimus geniculatus

A - Entire female.

B - Entire male.

C - Anterior region.

D - Oesophageal region.

E - Female gonad.

F - Female posterior region.

G - Male posterior region.

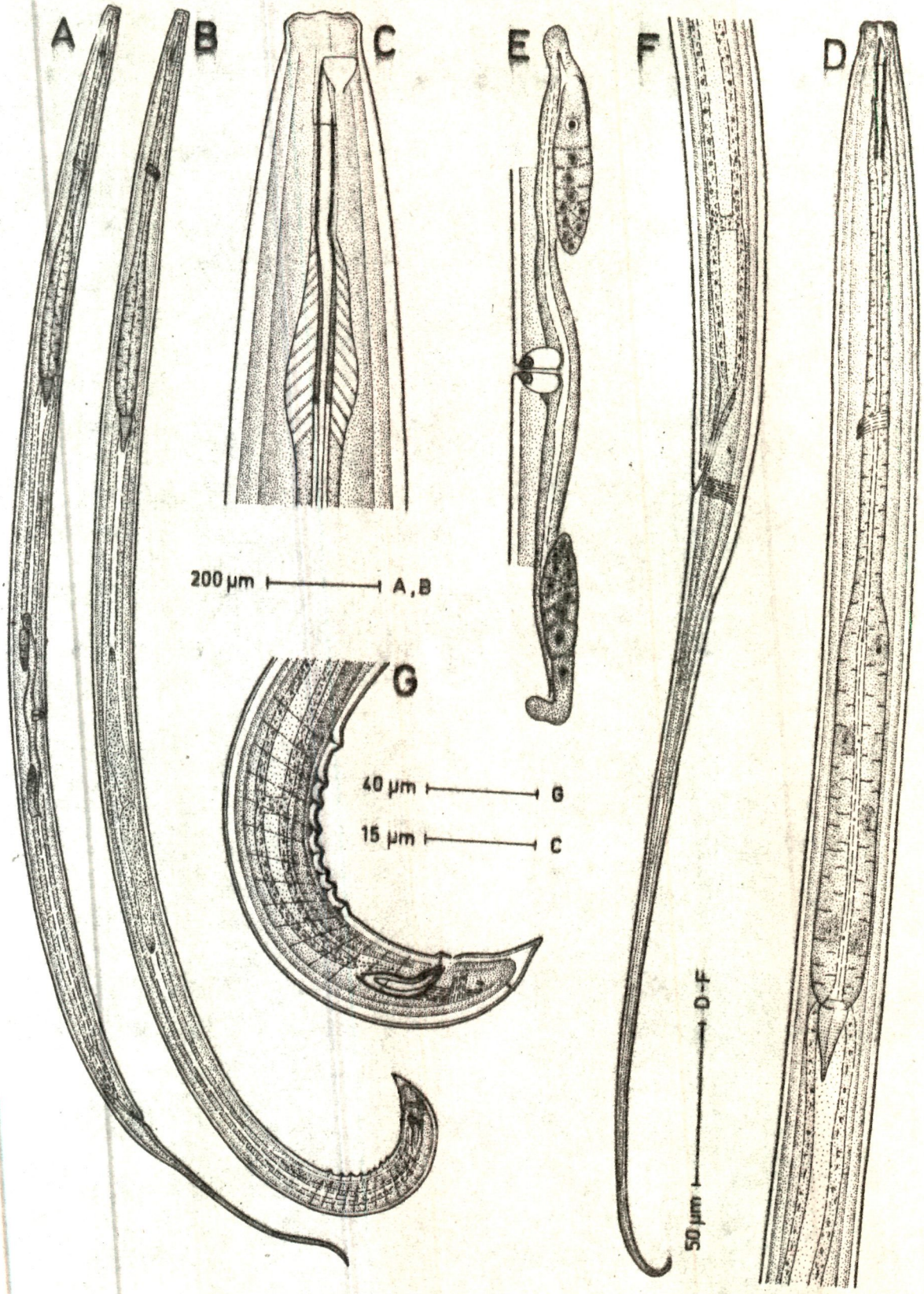

A
B
C
E
F
D
200 µm
A, B
G
40 µm
G
15 µm
C
D-F
50 µm

Fig. 8

Prodorylaimus obesus n. sp.

A - Entire female.

B - Entire male.

C - Anterior region.

D - Anterior region showing amphid.

E - Oesophageal region.

F - Female posterior region.

G - Male posterior region.

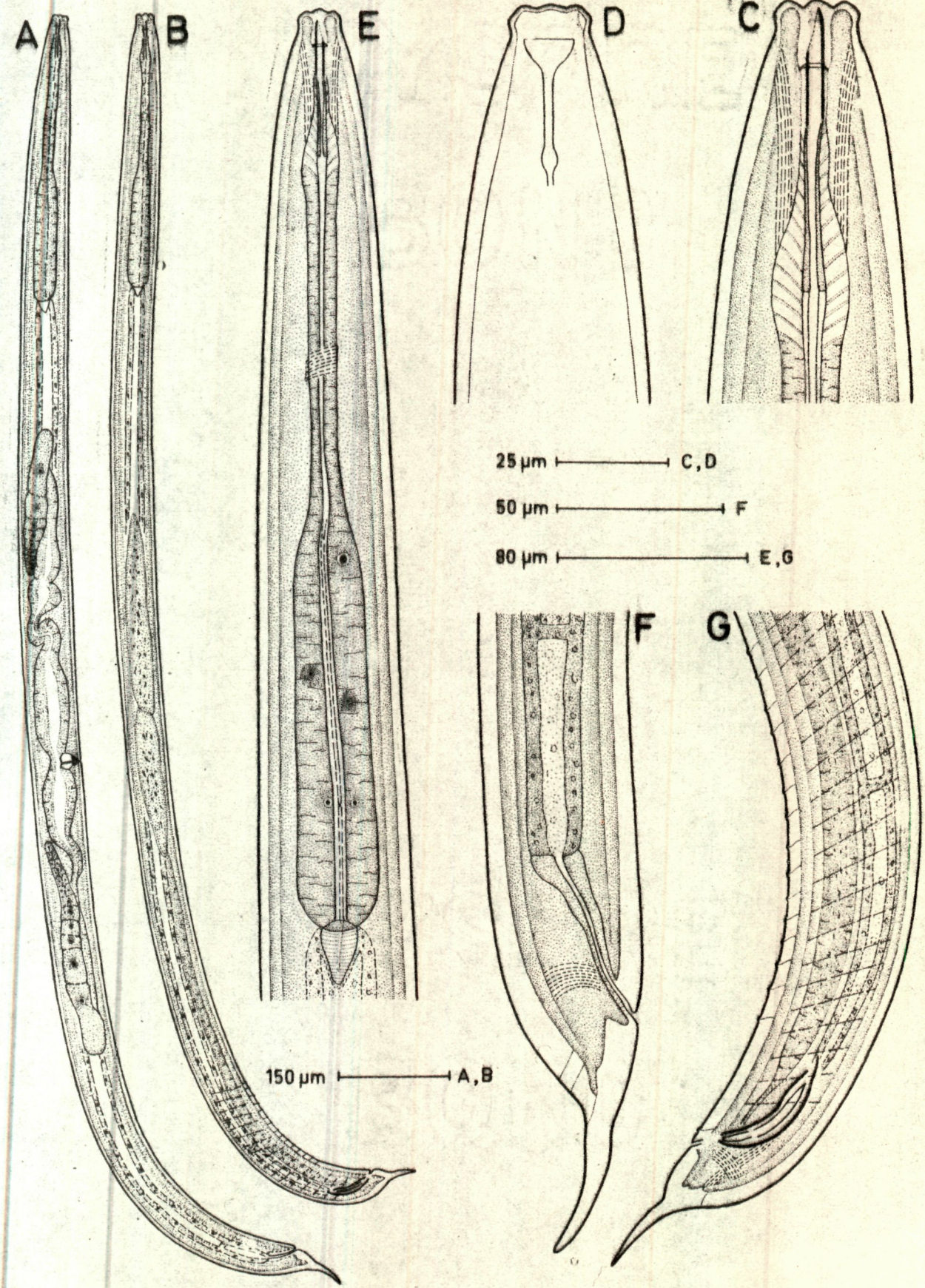

A
B
E
D
C
25 µm
C, D
50 µm
F
80 µm
E, G
F
G
150 µm
A, B

Fig. 9

Amphidoryleimus flagelliceuda

A - Anterior region.

B - Oesophageal region.

C - Expanded part of oesophagus.

D - Female goned.

E - Female posterior region.

F - Male posterior region.

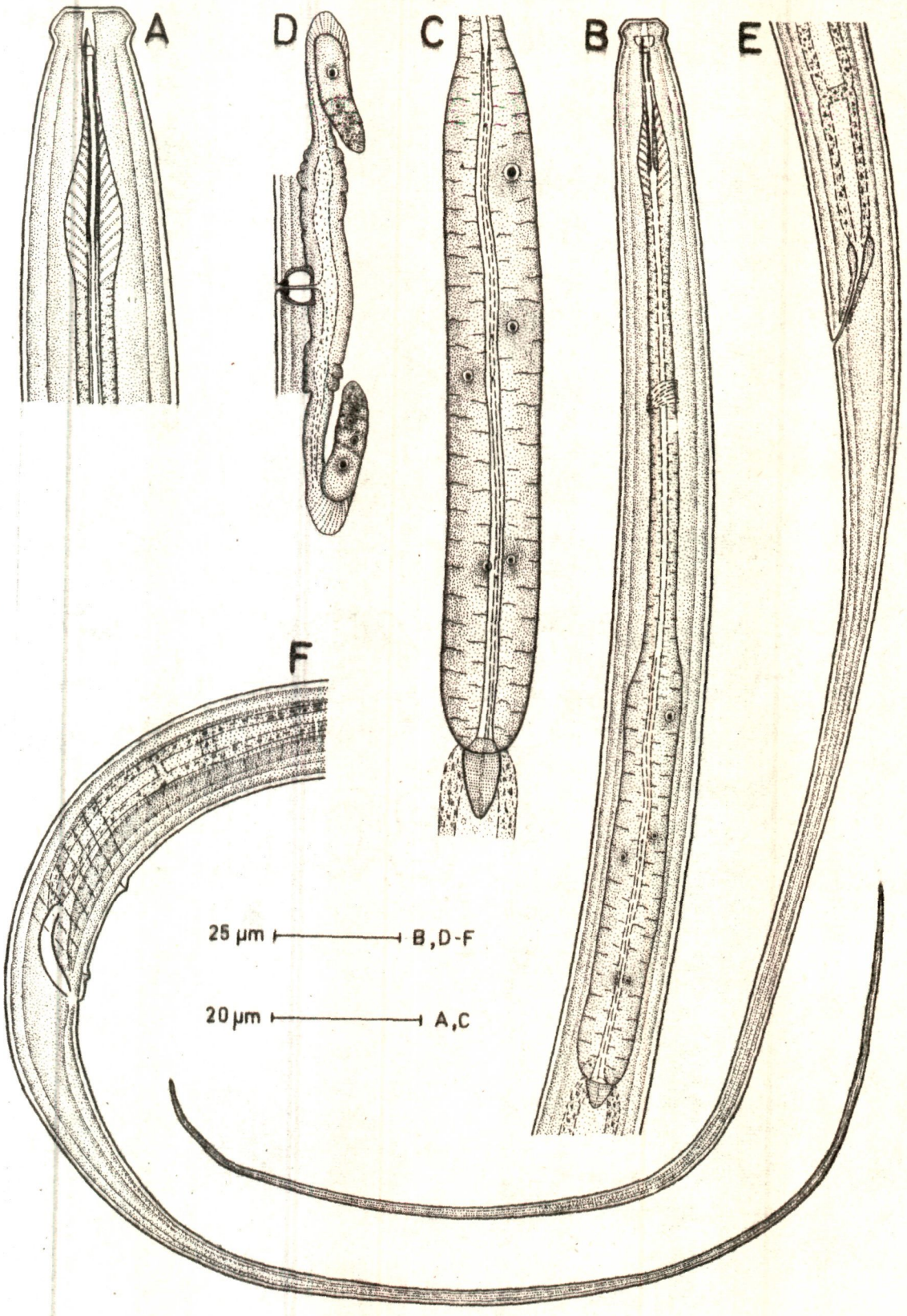

A
D
C
B
E
F
25 µm
B, D-F
20 µm
A, C

Fig. 10

Thornenema cavalcantii

A - Entire female.

B - Entire male.

C - Anterior region.

D - Anterior region showing amphid.

E - Oesophageal region.

F - Female gonad.

G - Female posterior region.

H - Male posterior region.

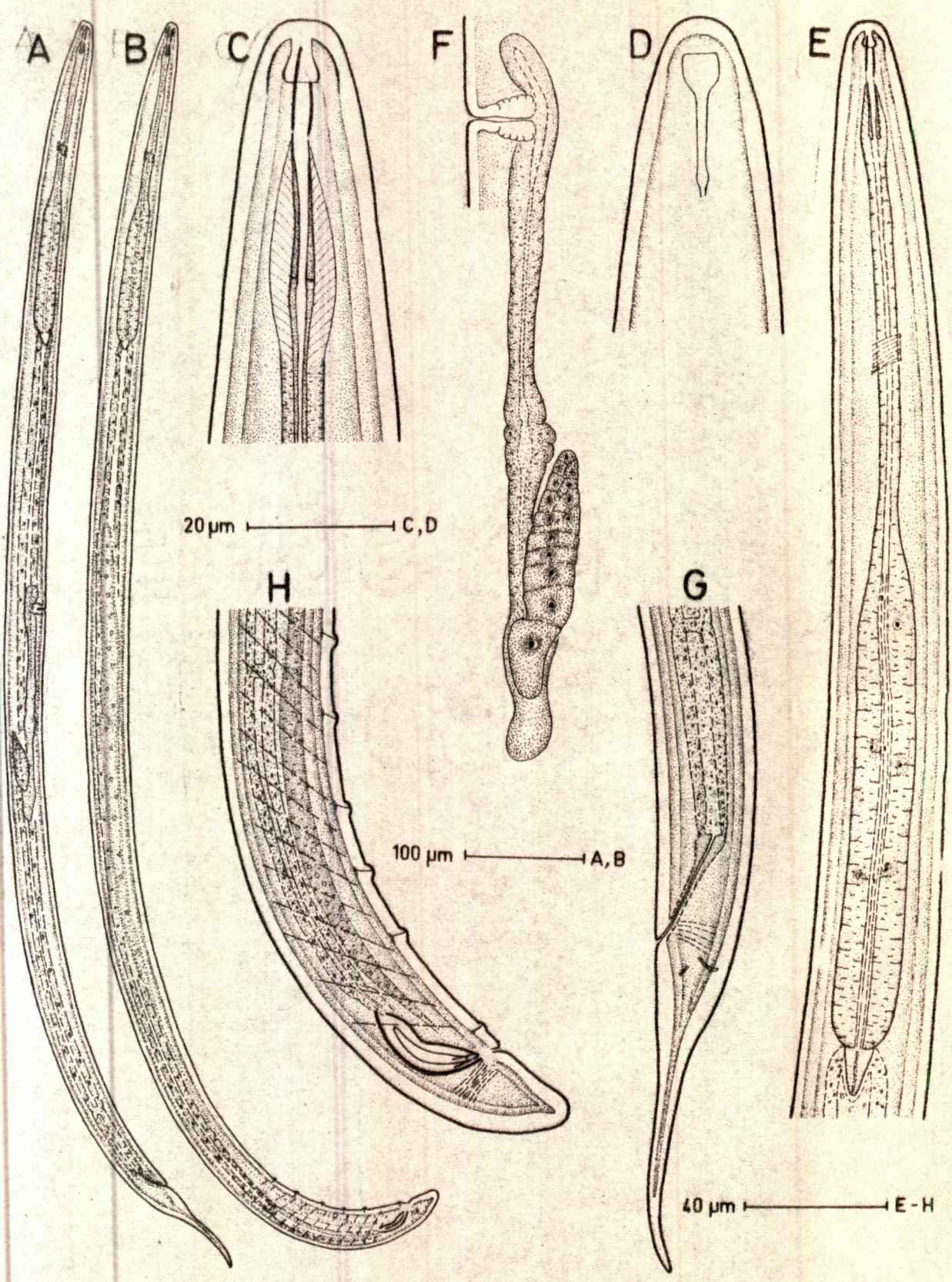

A
B
C
F
D
E
20 µm
C, D
H
G
100 µm
A, B
40 µm
E - H

Fig. 11

Dairaiauria oryzae n. sp.

A - Entire female.

B - Entire male.

C - Anterior region.

D - Anterior region showing amphid.

E - Oesophageal region

F - Expanded part of oesophagus.

G - Female gonad.

H - Female posterior region.

I - Male posterior region.

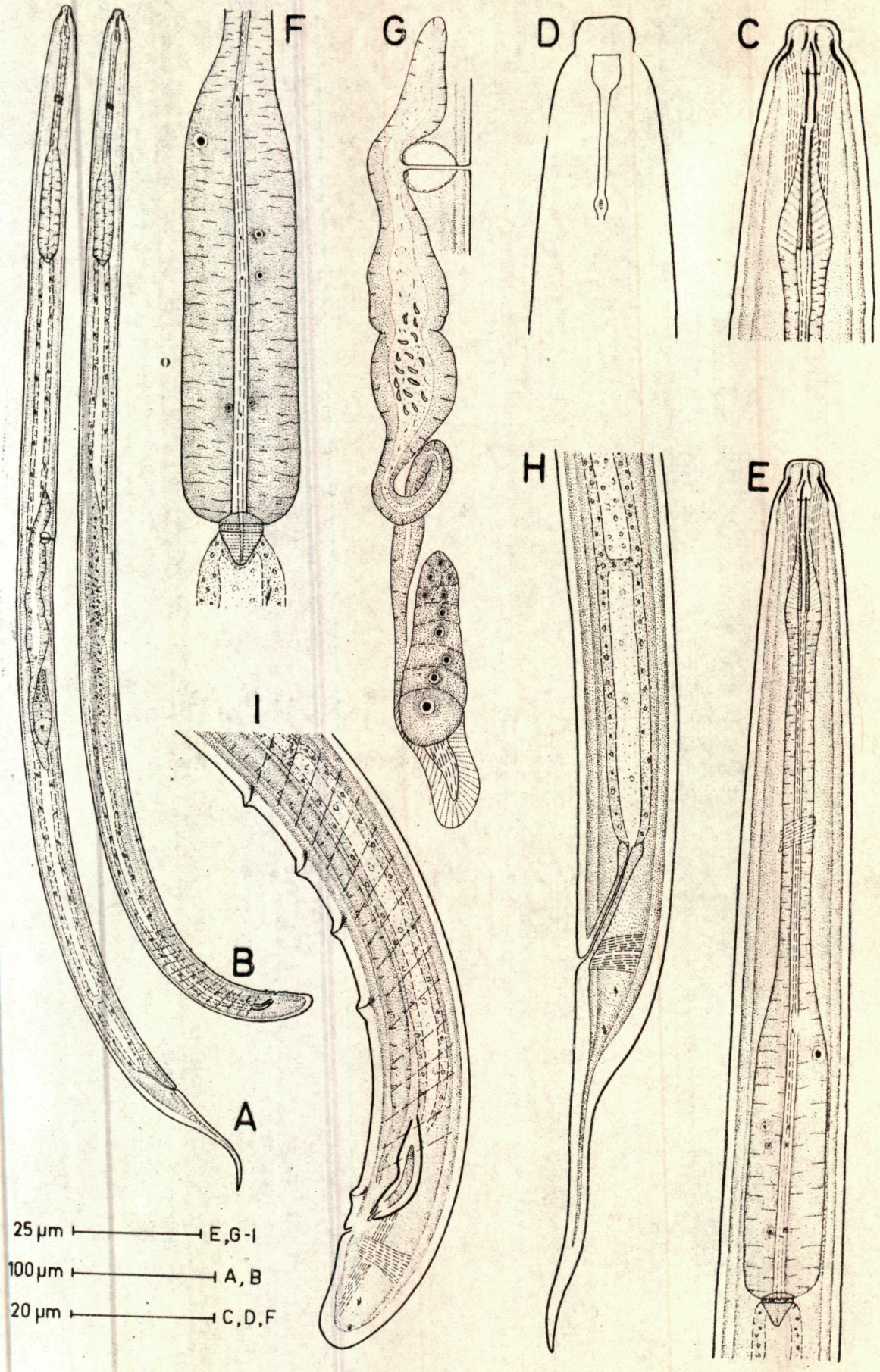

F
G
D
C
H
E
I
B
A
25 µm
E,G-I
100 µm
A, B
20 µm
C,D,F

Fig. 12

Ecumenicus monohystera

A - Entire female.

B - Anterior region.

C - Oesophageal region.

D - Female gonad.

E - Female posterior region.

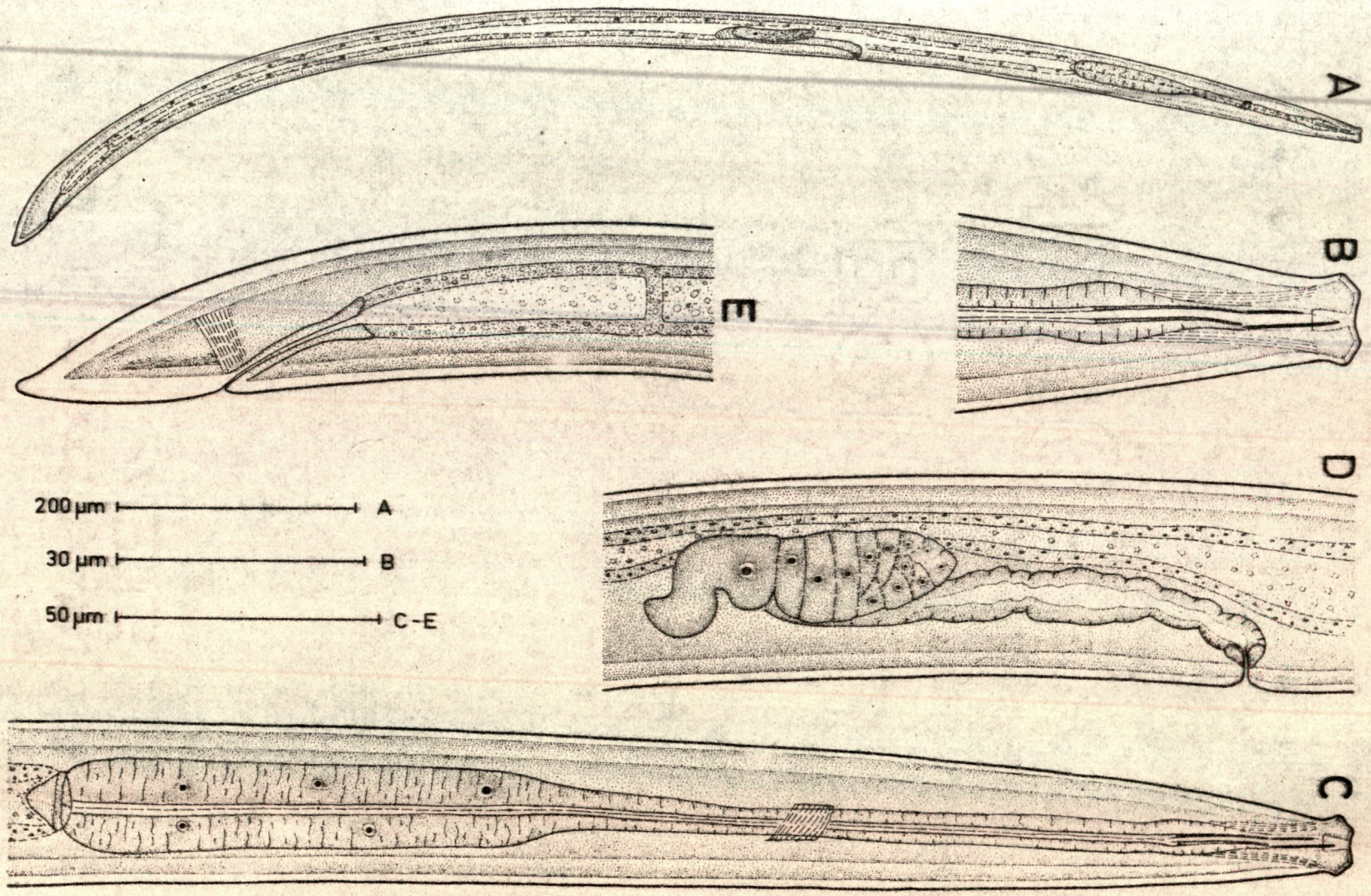

A
B
E
D
C
200 µm
A
30 µm
B
50 µm
C-E

Fig. 13

Labronema nepalense n. sp.

A - Entire female.

B - Anterior region.

C - Anterior end showing amphid.

D - Expended part of oesophagus.

E - Female genital branch (Posterior).

F - Female posterior region.

G - Female posterior end.

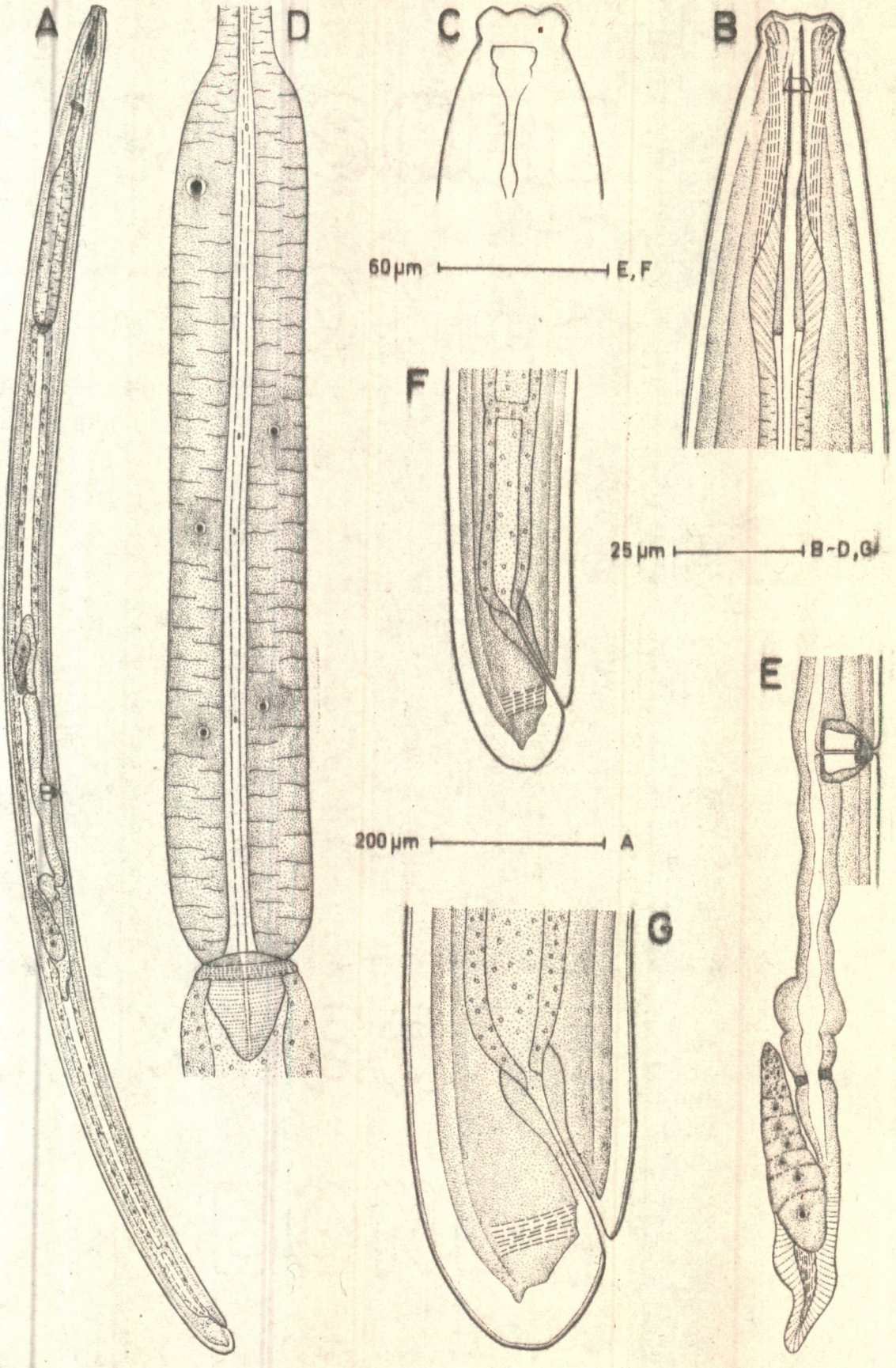

A
D
C
B
60 µm
E, F
F
25 µm
B-D, G
E
200 µm
A
G

Fig. 14

Labronema rarotongi n. sp.

A - Entire female.

B - Entire male.

C - Anterior region.

D - Oesophageal region.

E - Female genital branch (posterior).

F,G - Female posterior ends.

H - Male posterior region.

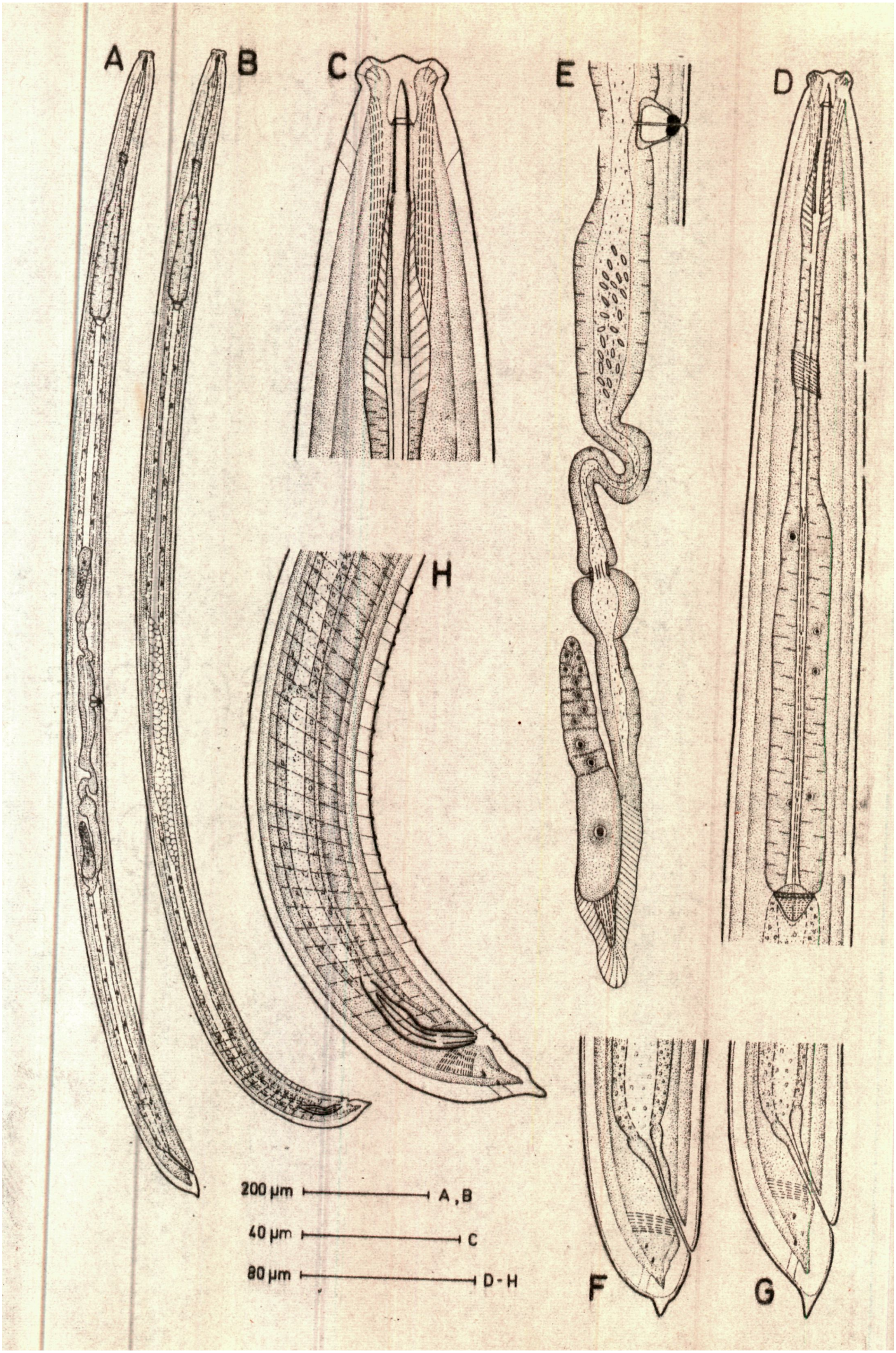

A
B
C
E
D
H
F
G
200 µm
A, B
40 µm
C
80 µm
D-H

Fig. 15

Cephalodorylaimus papillatus

A - Anterior region,

B - En face view

C - Expanded part of oesophagus,

D - Female genital branch (posterior),

E - Female posterior end,

F - Male posterior region.

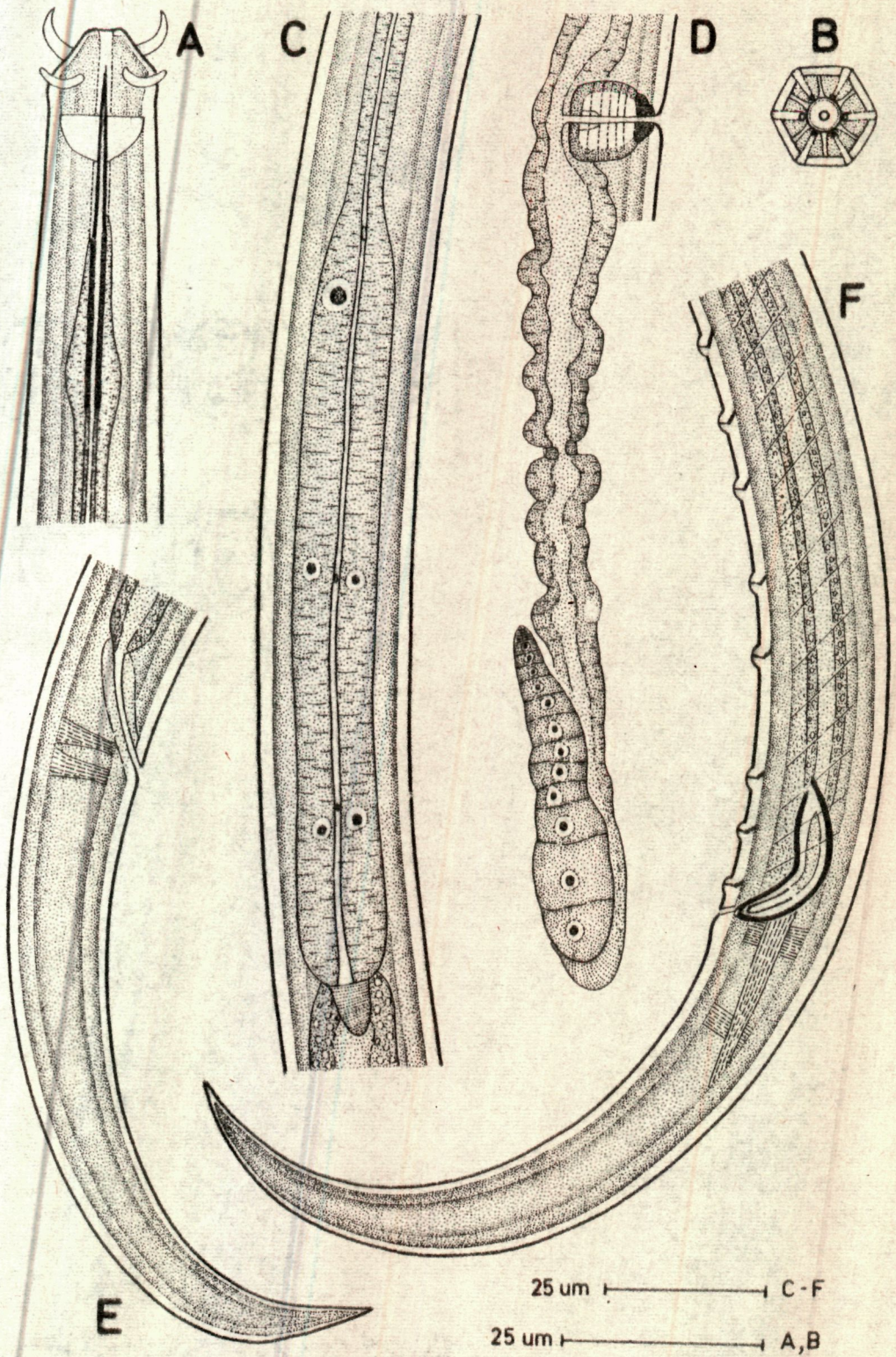

A
C
D
B
F
E
25 um
C-F
25 um
A,B

Fig. 16

Criverutus hastus n. sp.

A - Entire male.

B - Entire female.

C - Anterior region.

D - Anterior region showing amphid.

E - Expanded part of oesophagus.

F - Female genital branch (posterior).

G - Female posterior region.

H - Male posterior region.

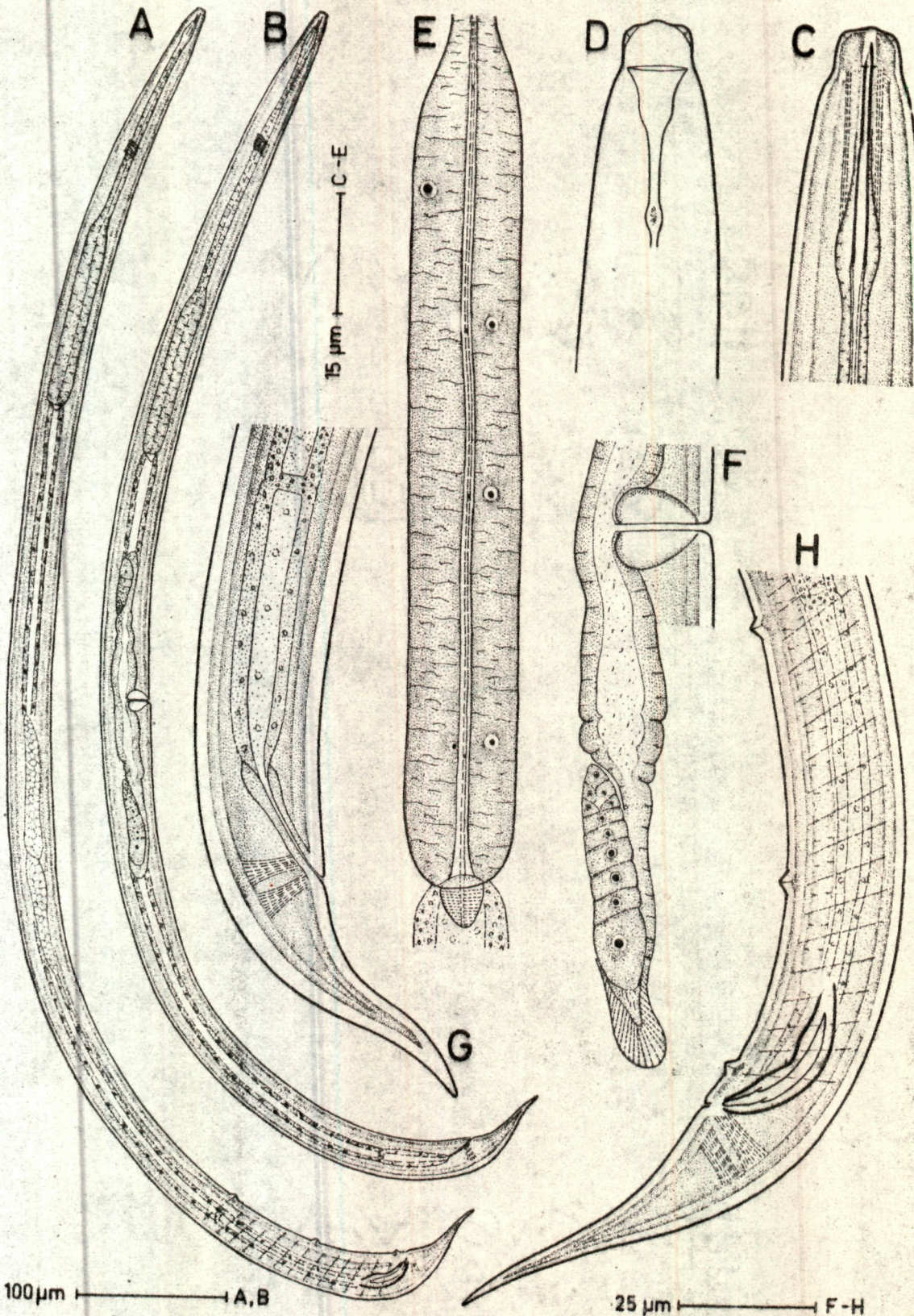

A
B
E
D
C
C-E
15 µm
F
H
G
100µm
A,B
25 µm
F-H

Fig. 17

A - E Adenolaimus orthus

A - Anterior region.

B - Anterior region (dorsoventral).

C - Oesophageal region.

D - Female gonad.

E - Female posterior end.

F - G Craterocoma aestivum

F - Anterior region.

G - Female posterior region.

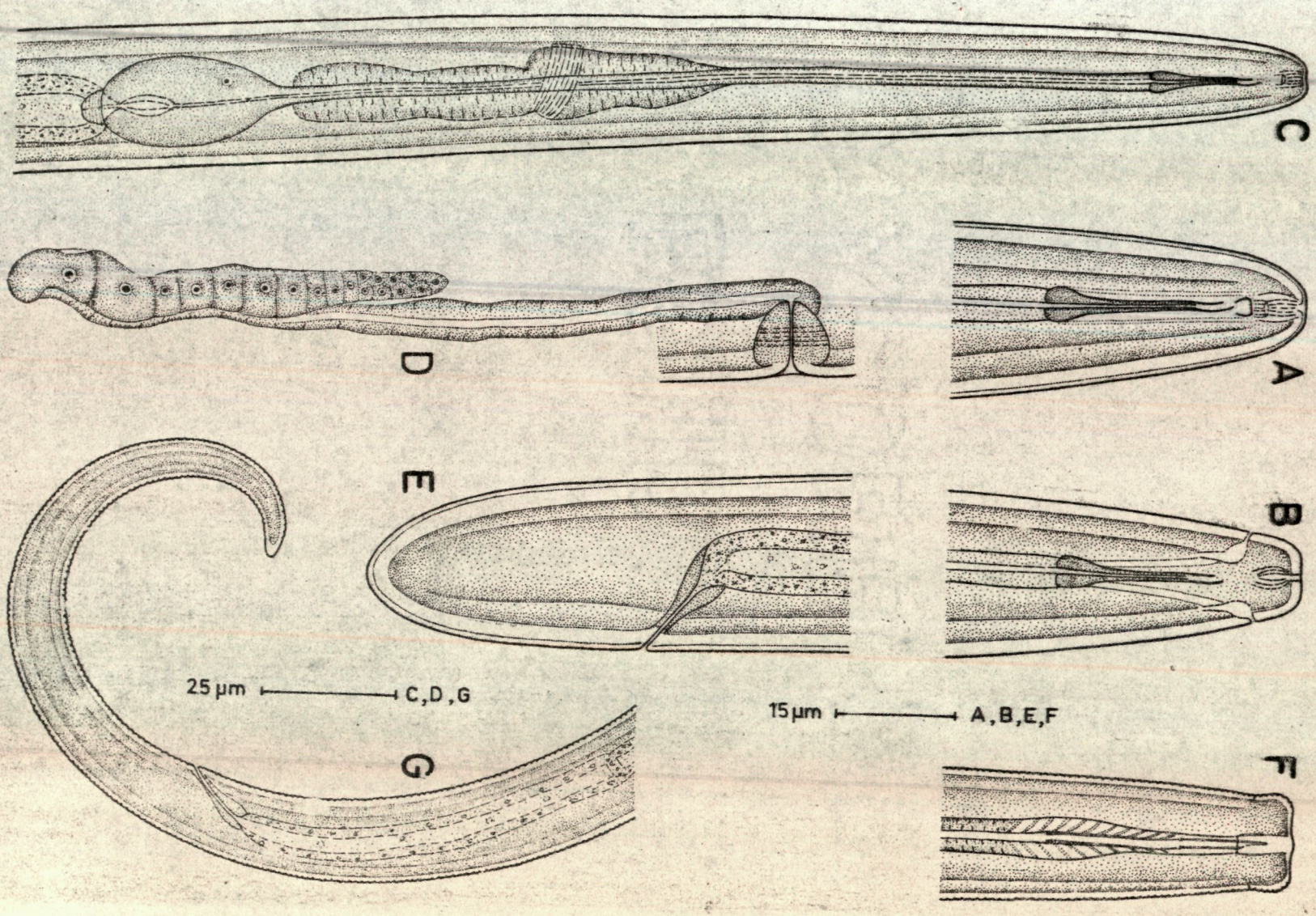

C
D
A
E
B
25 µm
C, D, G
15 µm
A, B, E, F
G
F

Fig. 18

A - C Lordellonema roreaum

A- anterior region,

B- Oesophageal region,

C- Female posterior region.

D - F Terenemella rorifer

D- Anterior region,

E- Oesophageal region,

F- Female posterior region.

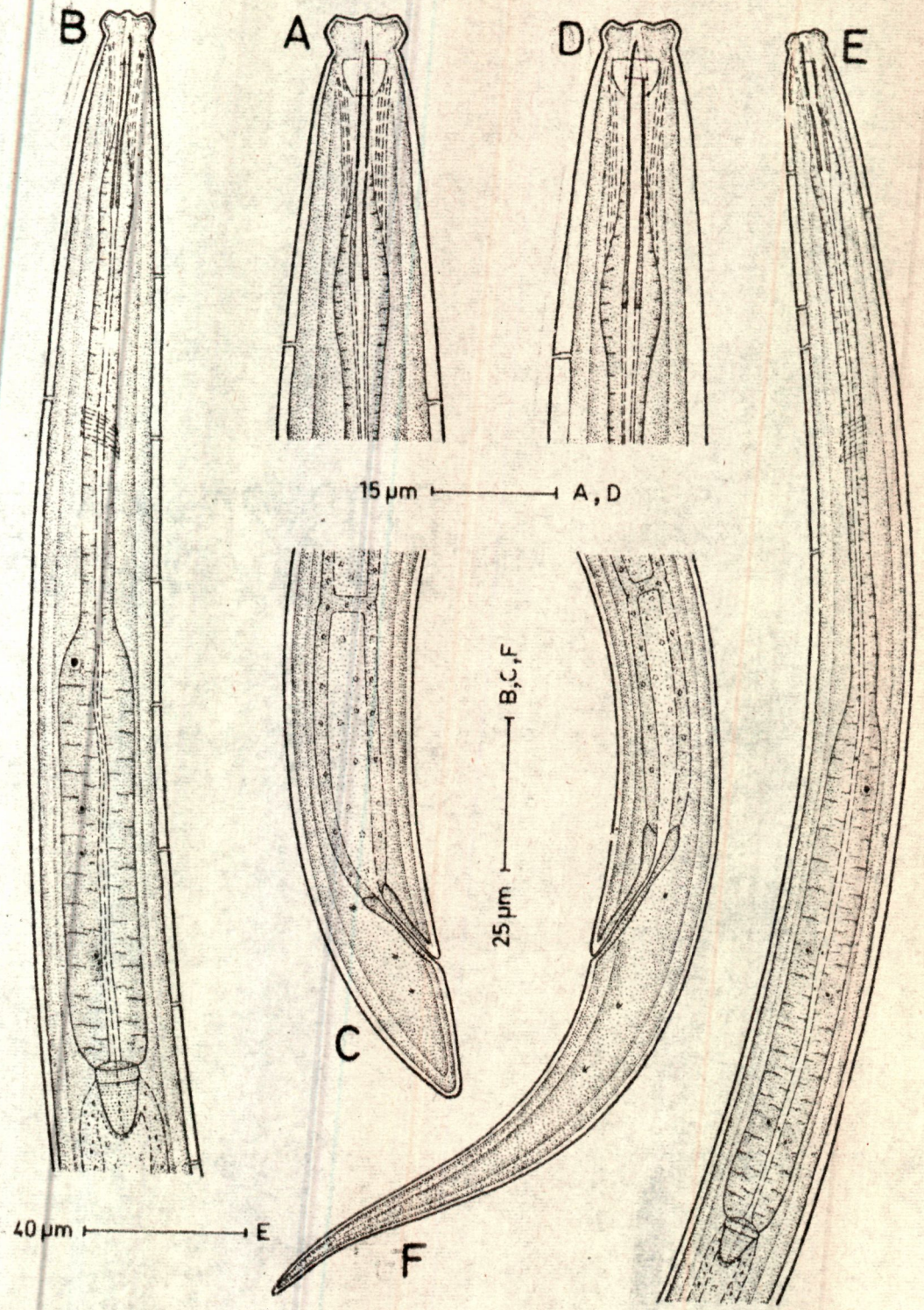

B
A
D
E
15 µm
A, D
B,C,F
25 µm
C
40 µm
E
F

Fig. 19

A - C Apercolaimellus amyloverus

A - Anterior region,

B - Expanded part of oesophagus,

C - Male posterior region.

D - F Discolaimus tenax

A - Anterior region,

E - Oesophageal region,

F - Male posterior region.

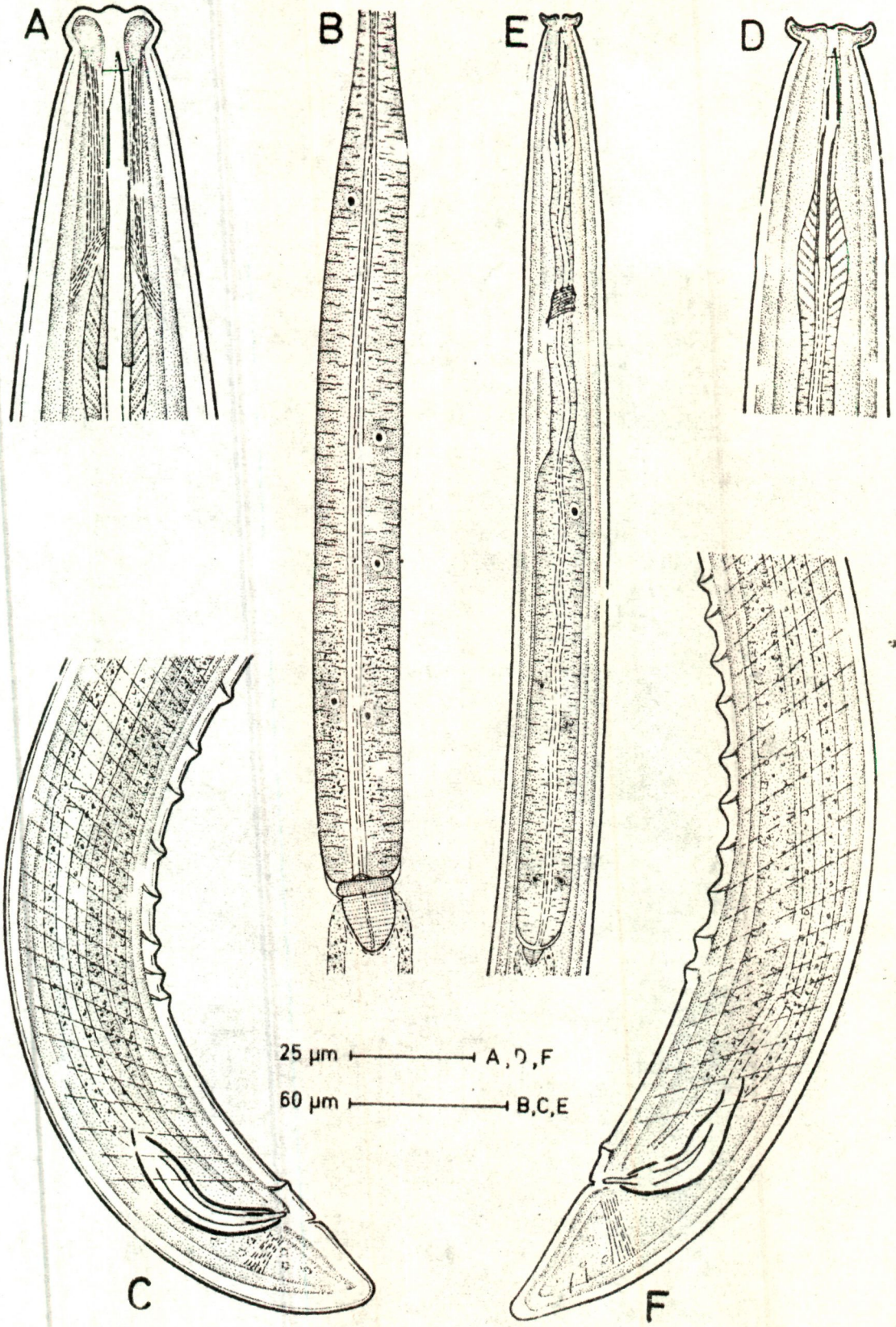

A
B
E
D
C
F
25 µm
A, D, F
60 µm
B, C, E

Fig. 20

Aporcelaimellus baqrii n. sp.

A - Entire female.

B - Entire male.

C - Anterior region.

D - Anterior end showing amphid.

E - Expanded part of oeso-phagus.

F - Female genital branch (posterior)

G - Female posterior region.

H - Male posterior region.

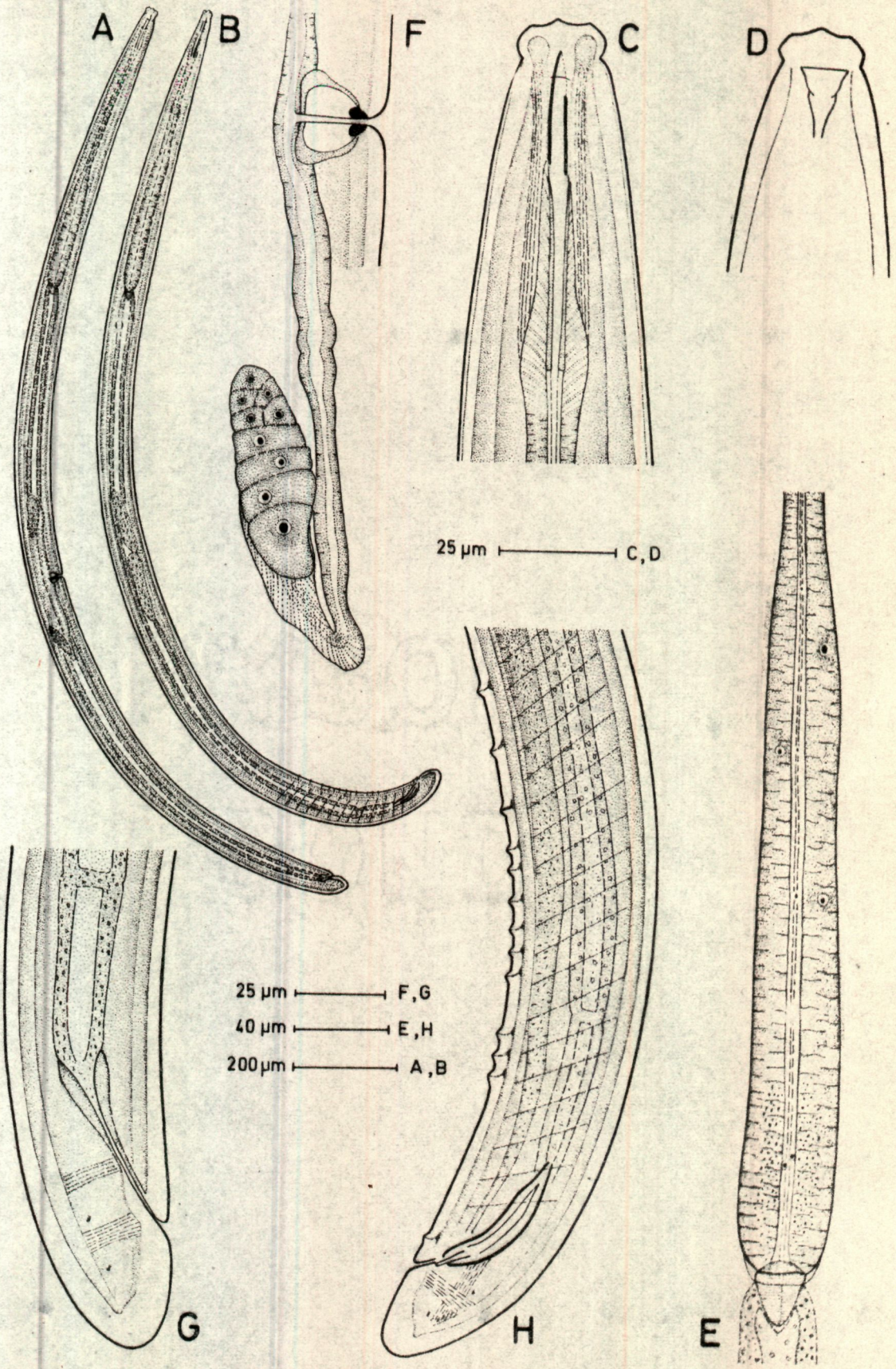

A
B
F
C
D
25 µm
C, D
25 µm
F, G
40 µm
E, H
200 µm
A, B
G
H
E

Fig. 21

Rotondira sacca

A - Anterior region.

B - Anterior region showing amphid.

C - Oesophageal region.

D - Expanded part of oesophagus.

E - Female posterior region.

F - Female posterior end.

G - Male posterior region.

H - Spicule and lateral guiding piece.

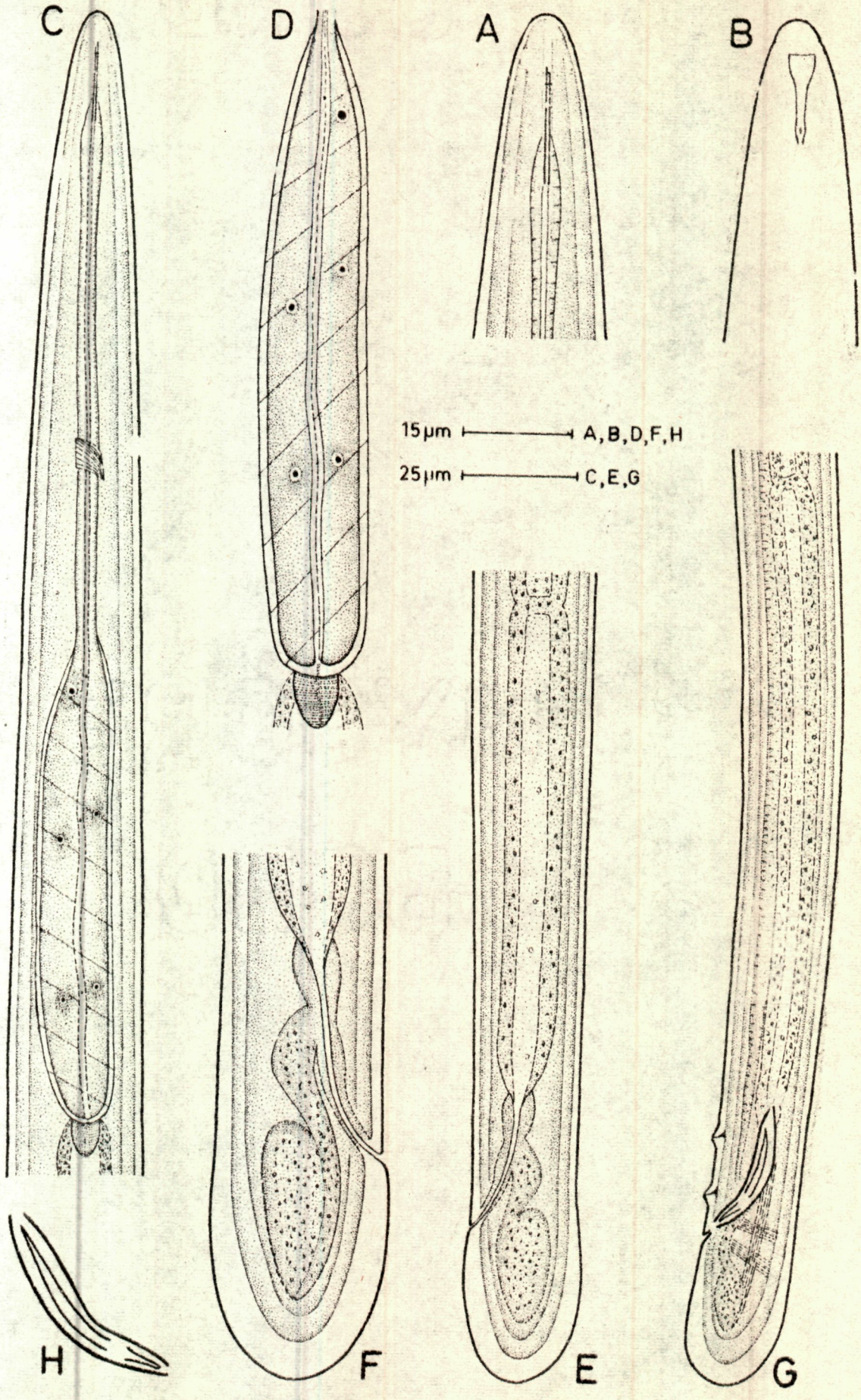

C
D
A
B
15µm
A,B,D,F,H
25µm
C,E,G
H
F
E
G

Fig. 22

Axonchium (Axonchium) ghanimi

A - Entire female.

B - Entire male.

C - Anterior region.

D - Anterior end showing amphid.

E - Oesophageal constriction.

F - Oesophago-intestinal junction.

G - Female gonad.

H - Female posterior end.

I - Male posterior region.

J - Spicule.

K - Lateral guiding piece.

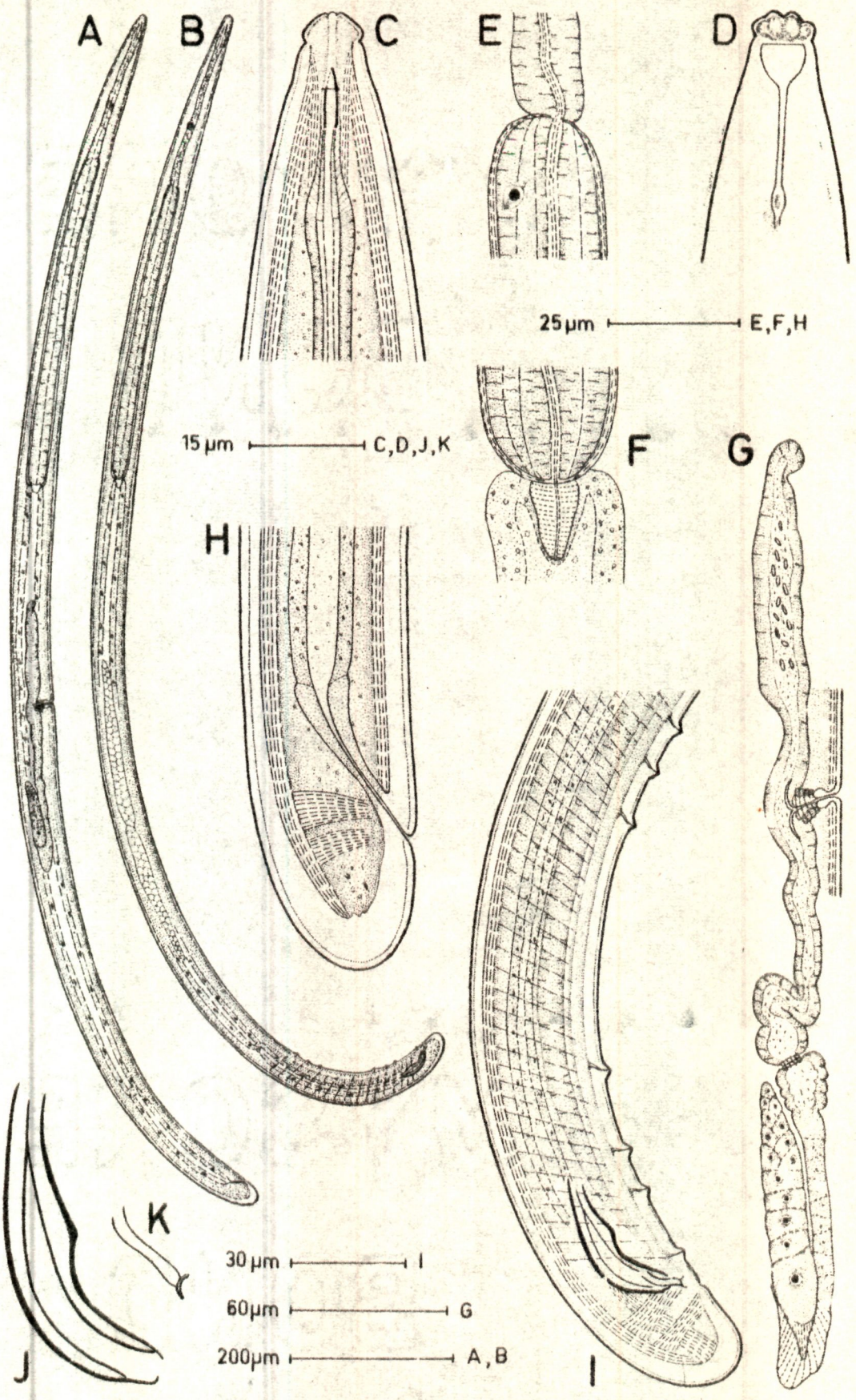

A
B
C
E
D
25 µm
E,F,H
15 µm
C,D,J,K
F
G
H
K
30 µm
I
60µm
G
200µm
A,B
J
I

Fig. 23

Axonchium (Axonchium) vallum n. sp.

A - Entire female.

B - Entire male.

C - Anterior region.

D - Anterior region showing amphid.

E - Oesophageal constriction.

F - Oesophago-intestinal junction.

G - Female gonad.

H - Vulval region.

I - Female posterior end.

J - Male posterior region.

K - Spicule.

L - Lateral guiding piece.

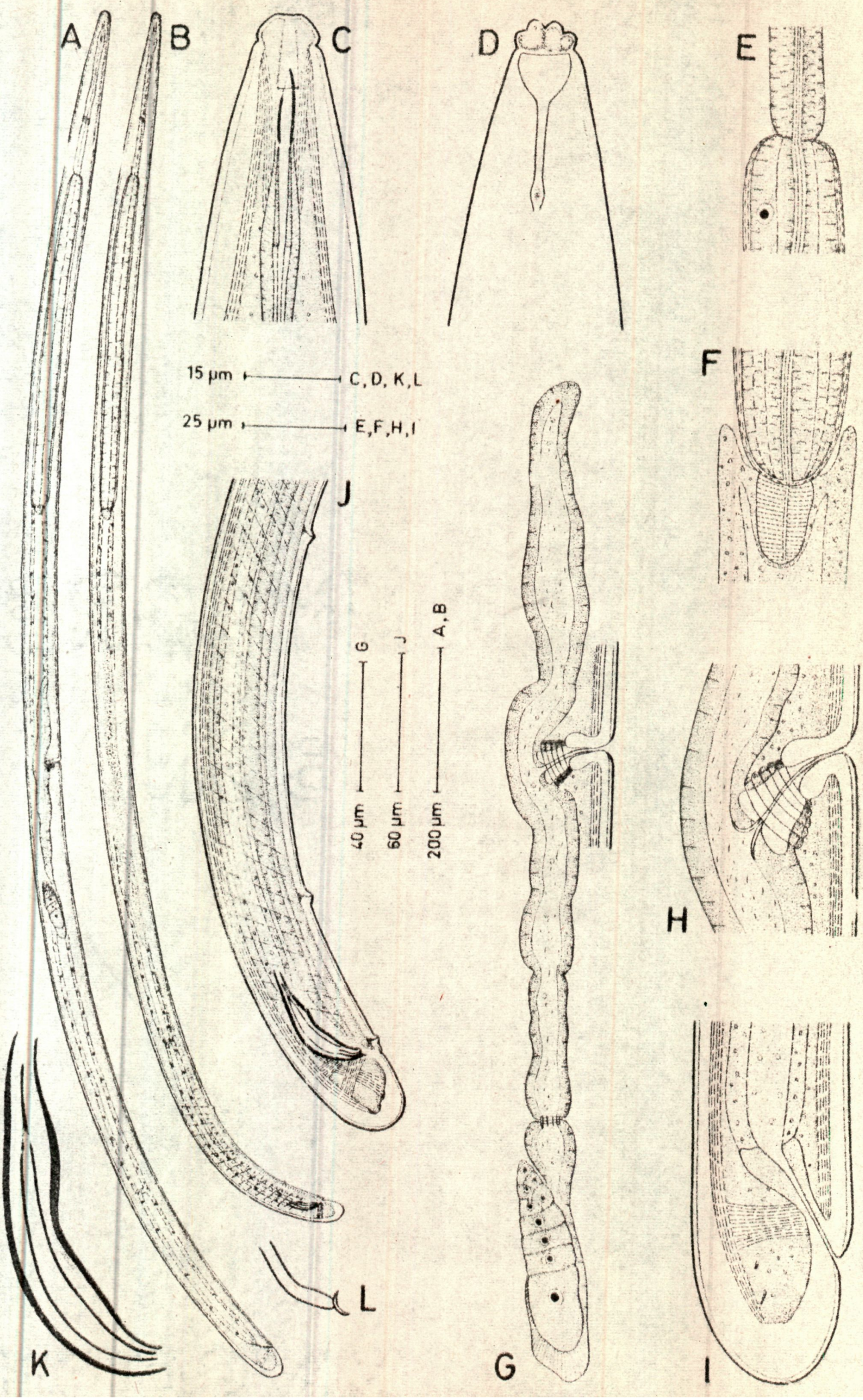

A
B
C
D
E
F
G
H
I
J
K
L
15 µm
C, D, K, L
25 µm
E, F, H, I
40 µm
G
60 µm
J
200 µm
A, B

Fig. 24

Axonchium (Metaxonchium) vaginatum

A - Entire female.

B - Entire male.

C - Anterior region.

D - Oesophageal constriction.

E - Oesophago-intestinal junction.

F - Female gonad.

G - Female posterior end.

H - Male posterior region.

I - Spicule and lateral guiding piece.

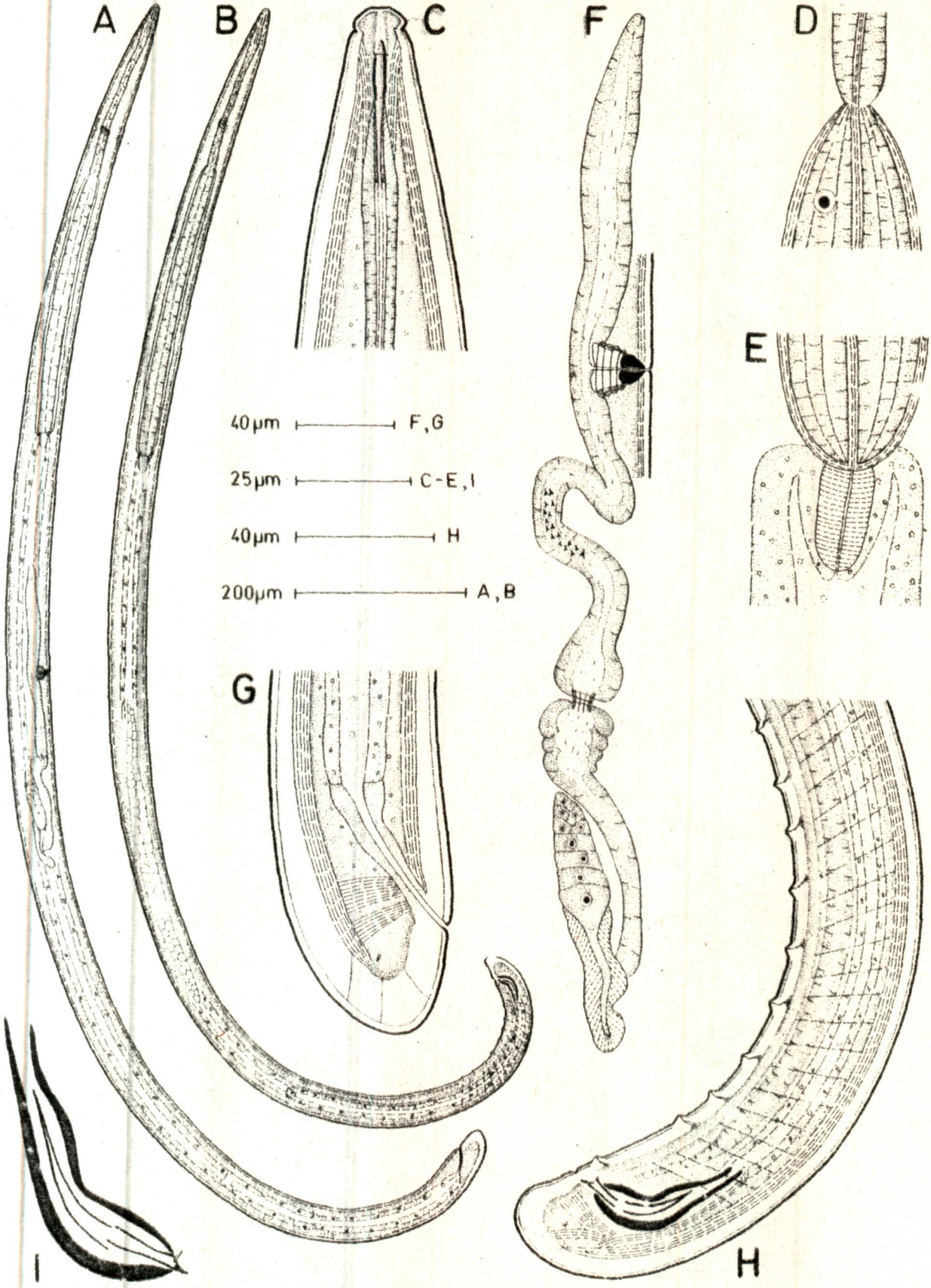

A
B
C
F
D
E
40µm F,G
25µm C-E,I
40µm H
200µm A,B
G
I
H

Fig. 25

Axonchium (_Metaxonchium_) _apiculum_ n. sp.

A - Entire female.

B - Entire male.

C - Anterior region.

D - Anterior region showing amphid.

E - Oesophageal constriction.

F - Oesophago-intestinal junction.

G - Female gonad.

H - Vulval region.

I - Female posterior end.

J - Male posterior region.

K - Spicule.

L - Lateral guiding piece.

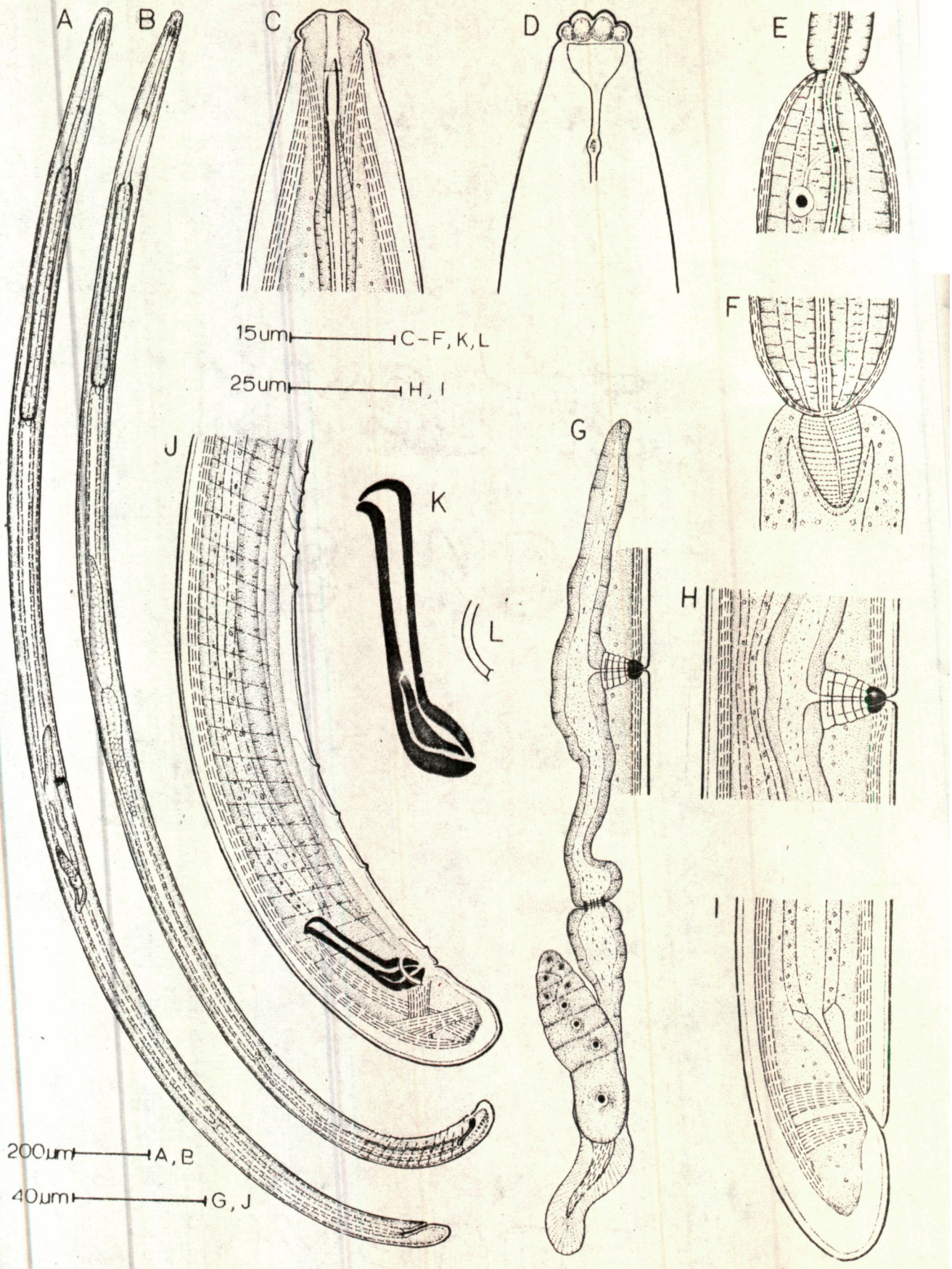

A
B
C
D
E
F
G
H
I
J
K
L
15um C-F, K, L
25um H, I
200um A, B
40um G, J

Fig. 26

Axonchium (Enaxonchium) tacitum n. sp.

A - Entire female.

B - Entire male.

C - Anterior region.

D - Anterior end showing amphid.

E - Oesophageal constriction.

F - Oesophago-intestinal junction.

G - Female gonad.

H - Vulval region.

I - Female posterior end.

J - Male posterior region.

K - Spicule.

L - Lateral guiding piece.

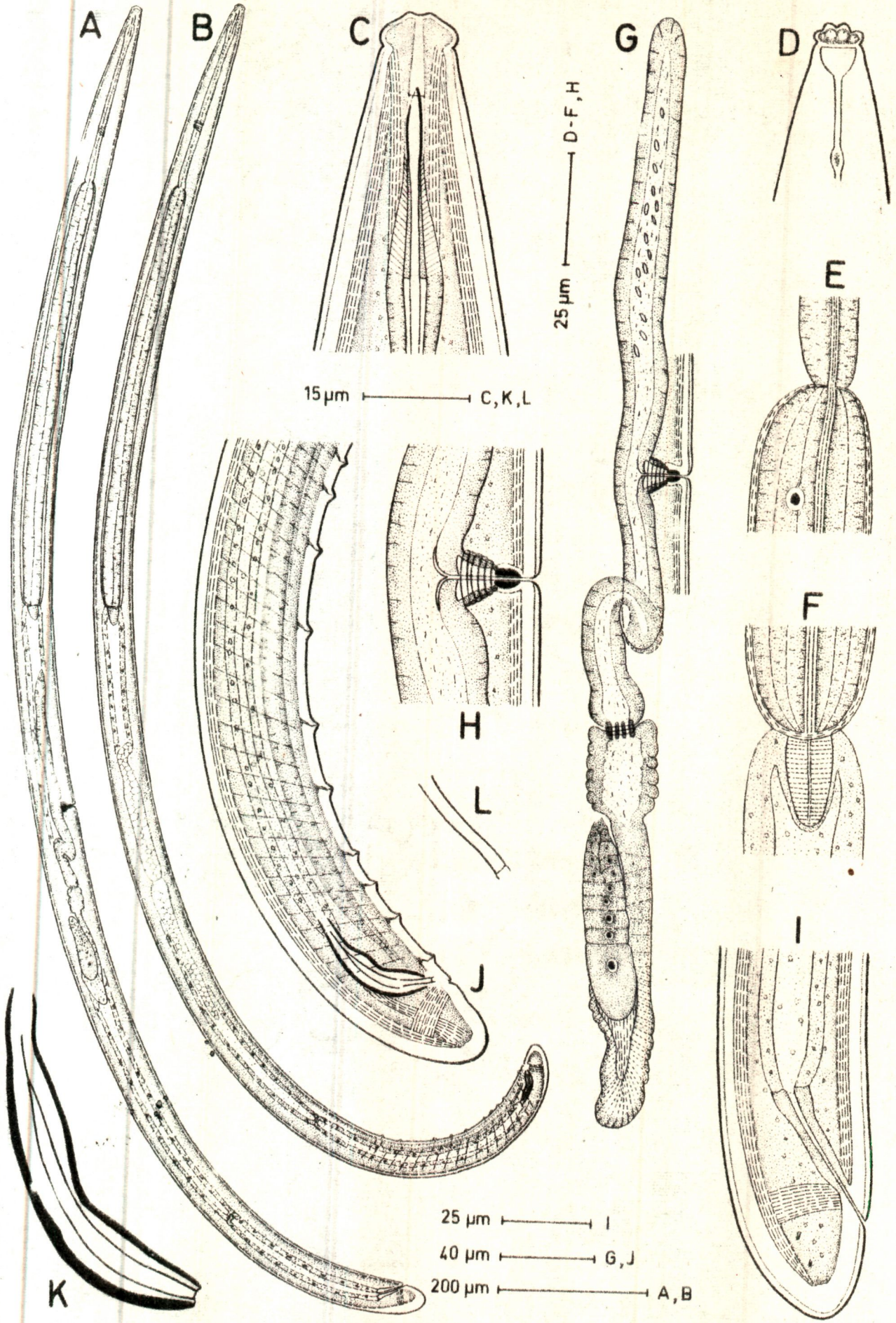

A
B
C
G
D
D-F,H
25 µm
E
15 µm
C,K,L
H
F
L
J
I
K
25 µm
I
40 µm
G,J
200 µm
A,B

Fig. 27

Tylaimoides chameliensis n. sp.

A - Entire female.

B - Entire male.

C - Anterior region.

D - Anterior end showing amphid.

E - Oesophageal region.

F - Expanded part of oesophagus.

G - Female genital branch (posterior).

H - Female posterior region.

I - Female posterior end.

J - Male posterior region.

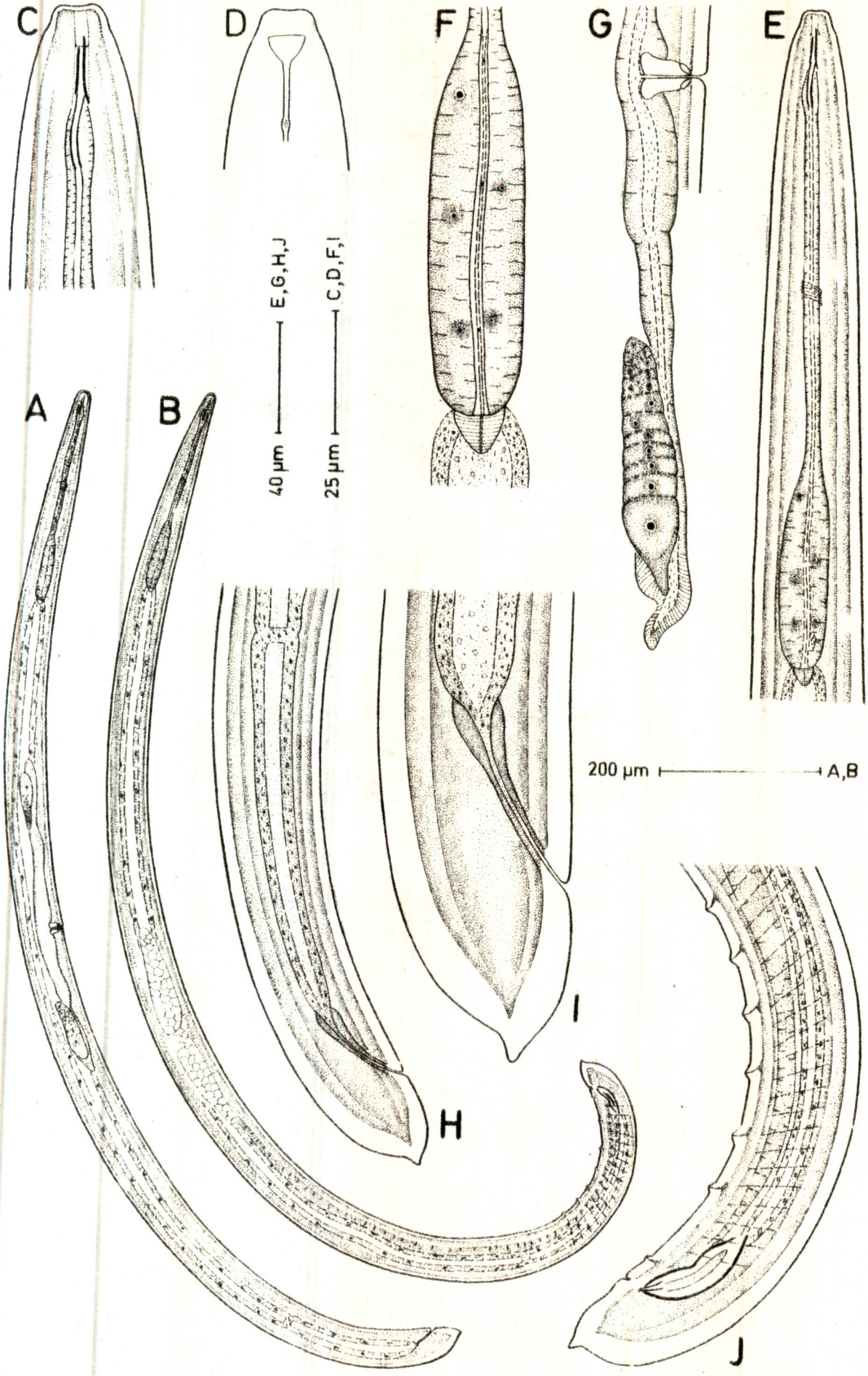

C
D
F
G
E
A
B
E,G,H,J
40 µm
C,D,F,I
25 µm
200 µm
A,B
H
I
J

Fig. 28

Boryslaimoides kalinnus n. sp.

A - Entire female.

B - Entire male.

C - Anterior region.

D - Anterior end showing amphid.

E - Oesophageal region.

F - Expanded part of oesophagus.

G - Female gonad.

H - Female posterior region.

I - Male posterior region.

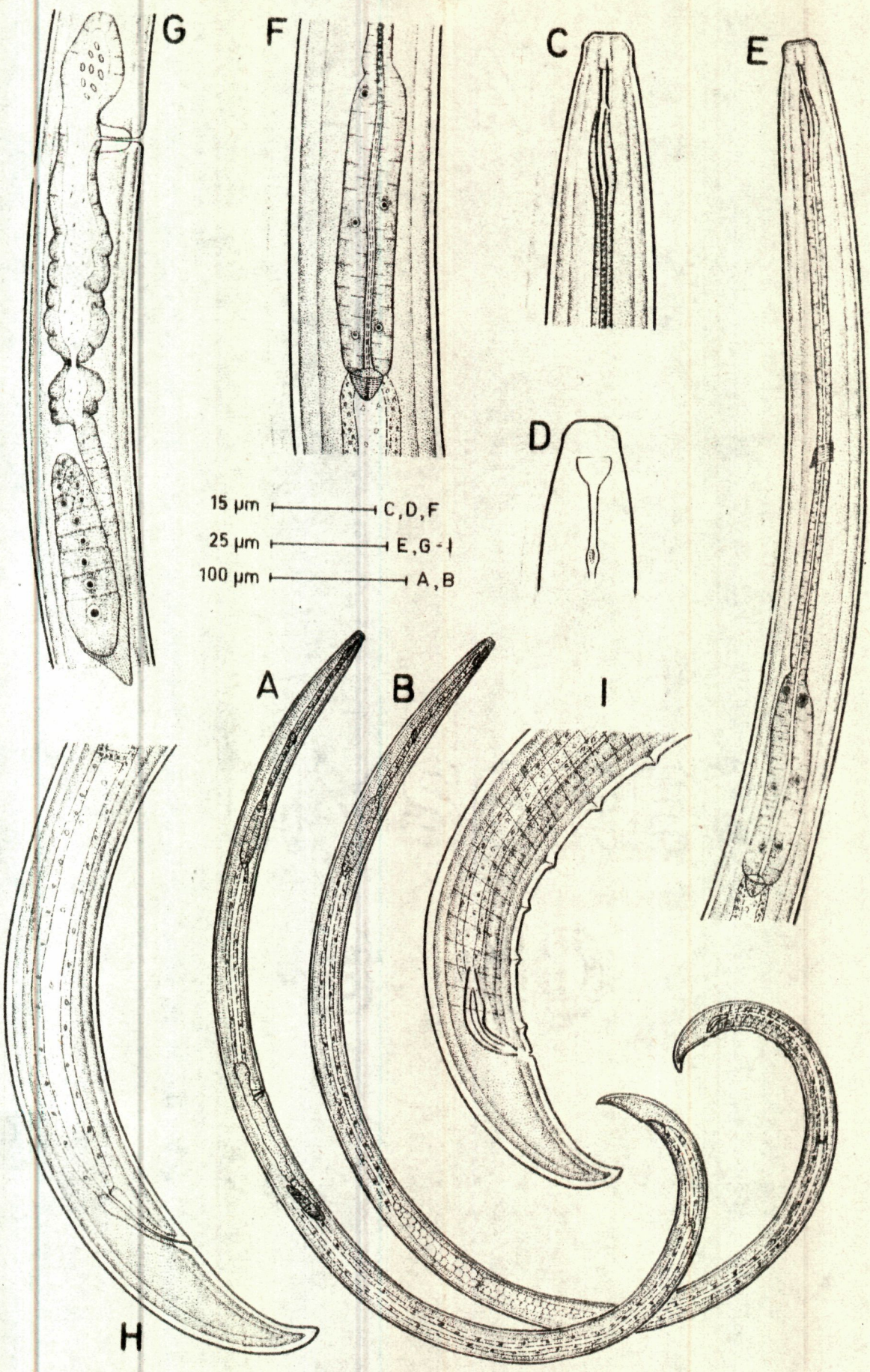

G
F
C
E
D
15 µm
C, D, F
25 µm
E, G - I
100 µm
A, B
A
B
I
H

Fig. 29

Moreaia parva n. sp.

A - Entire male.

B - Entire female.

C - Anterior region.

D - Anterior end showing amphid.

E - Oesophageal region.

F - Female gonad.

G - Female posterior end.

H - Male posterior region.

I - Spicule.

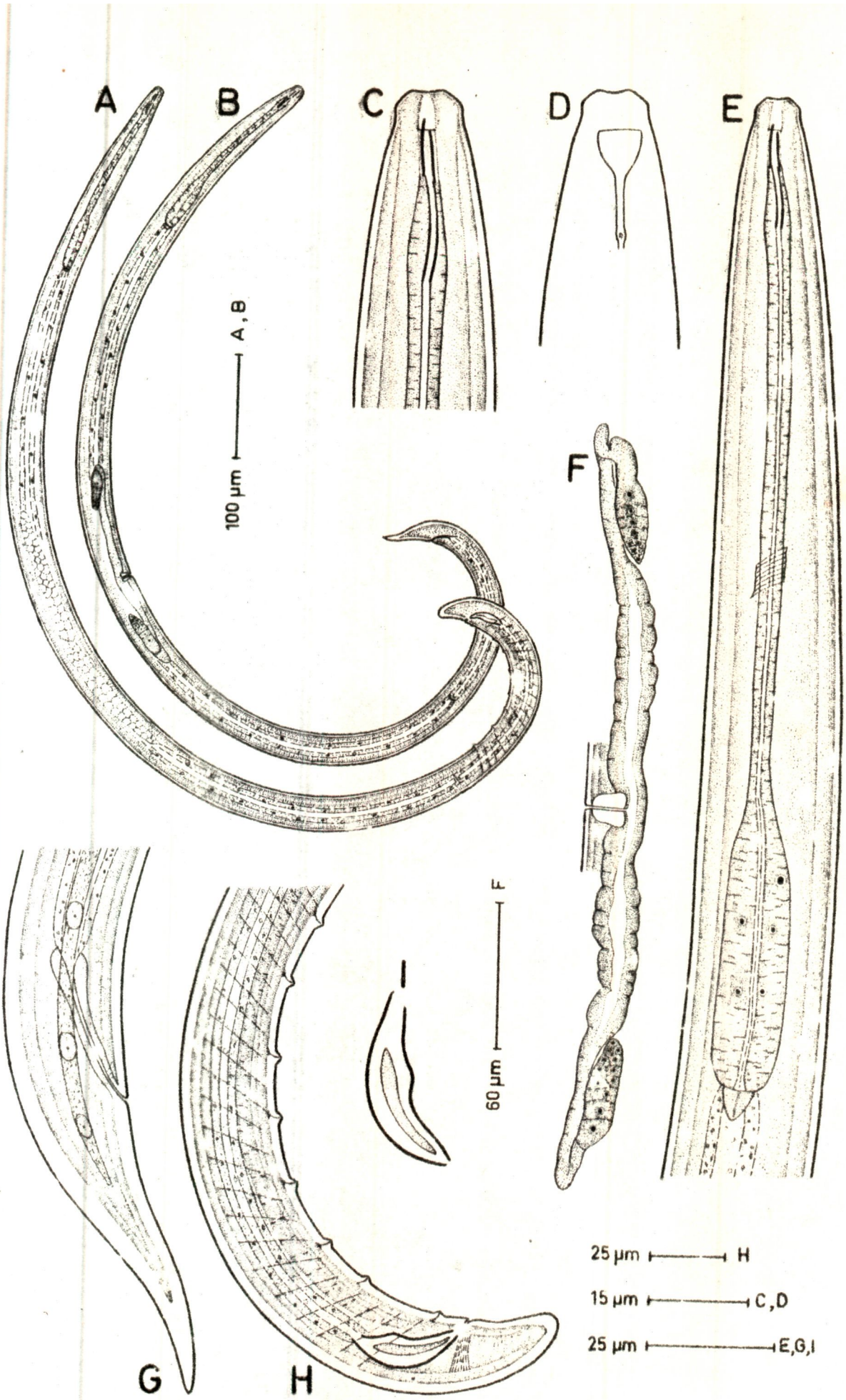

A
B
C
D
E
F
G
H
I
100 µm
A, B
60 µm
F
25 µm
H
15 µm
C, D
25 µm
E, G, I

Fig. 30

Calolaimus amphidius n. sp.

A - Anterior region.

B - Anterior end showing amphid.

C - Oesophageal region.

D - Expanded part of oesophagus.

E - Female genital branch (anterior).

F - Female posterior end.

G - Male posterior region.

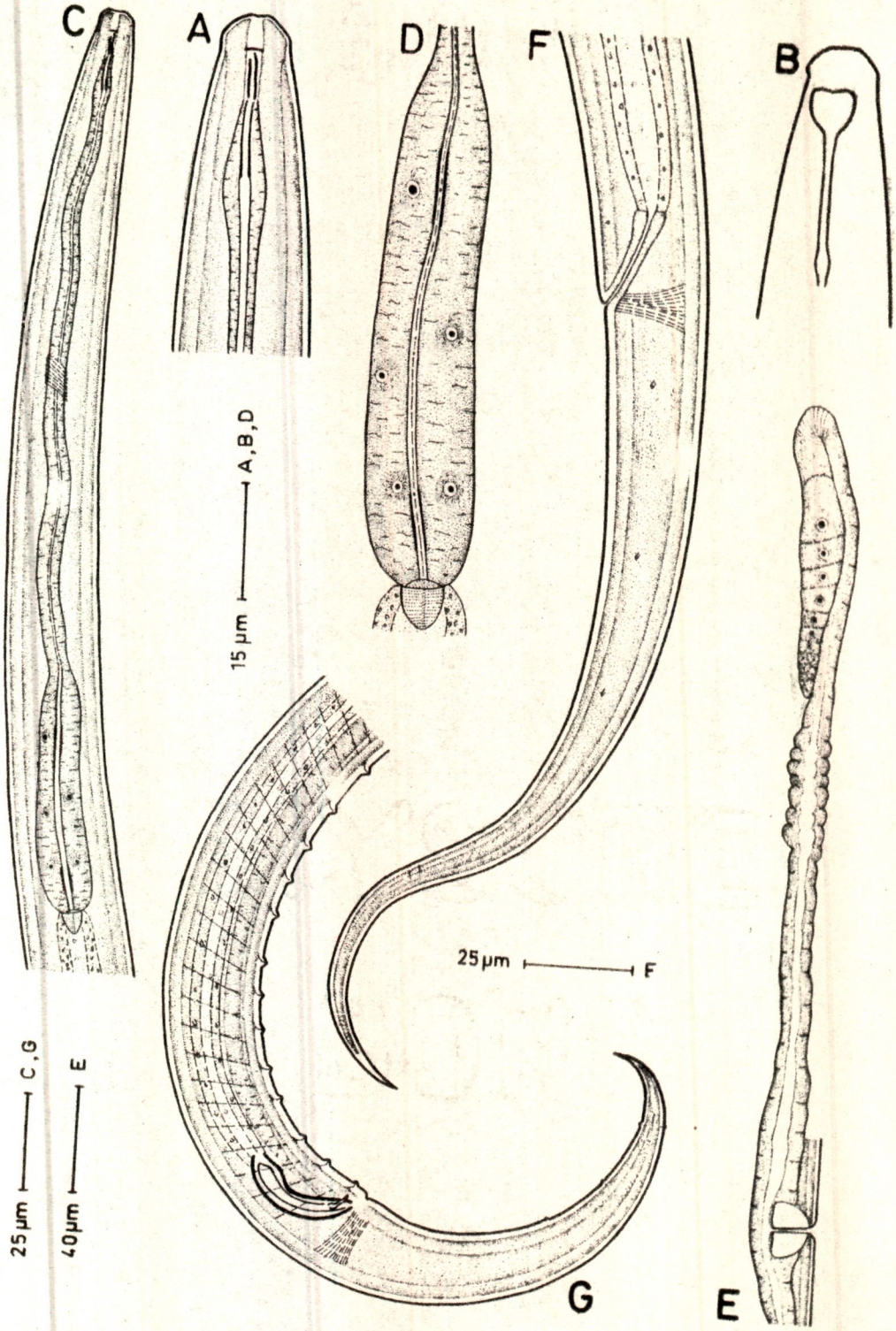

C
A
D
F
B
A,B,D
15 µm
25 µm
F
C,G
25 µm
E
40µm
G
E

Fig. 31

Tylencholaimus keratoreas n. sp.

A - Entire female.

B - Entire male.

C - Anterior region.

D - Oesophageal region.

E - Female genital branch (posterior).

F - Female posterior region.

G - Male posterior region.

H - Spicule.

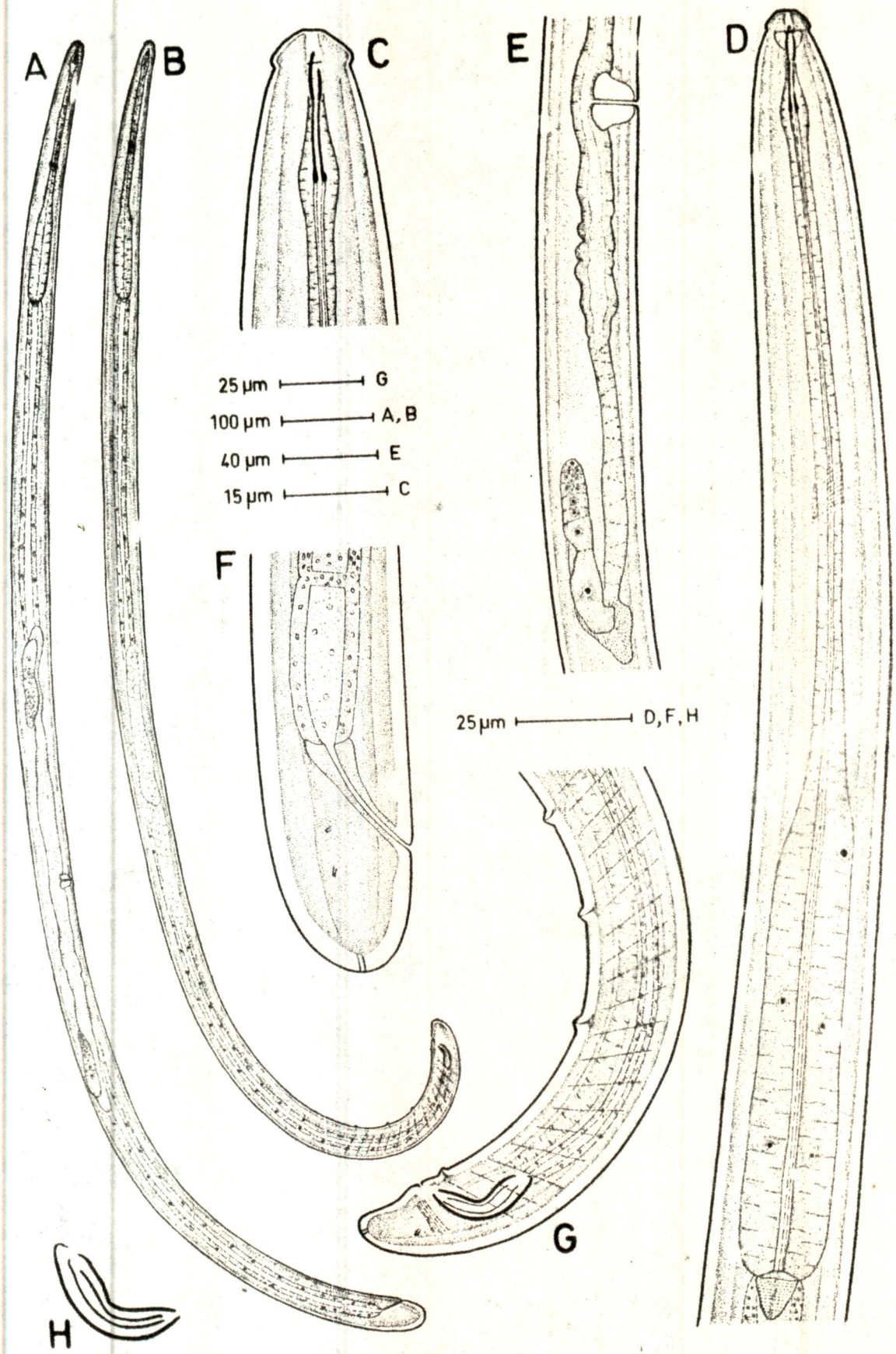

A
B
C
E
D
25 µm G
100 µm A, B
40 µm E
15 µm C
F
25 µm D, F, H
G
H

Fig. 32

Tylencholaimus aquaticus n. sp.

A - Entire female.

B - Anterior region.

C - Anterior end showing amphid.

D - Oesophageal region.

E - Expanded part of oesophagus.

F - Female gonad.

G - Female posterior region.

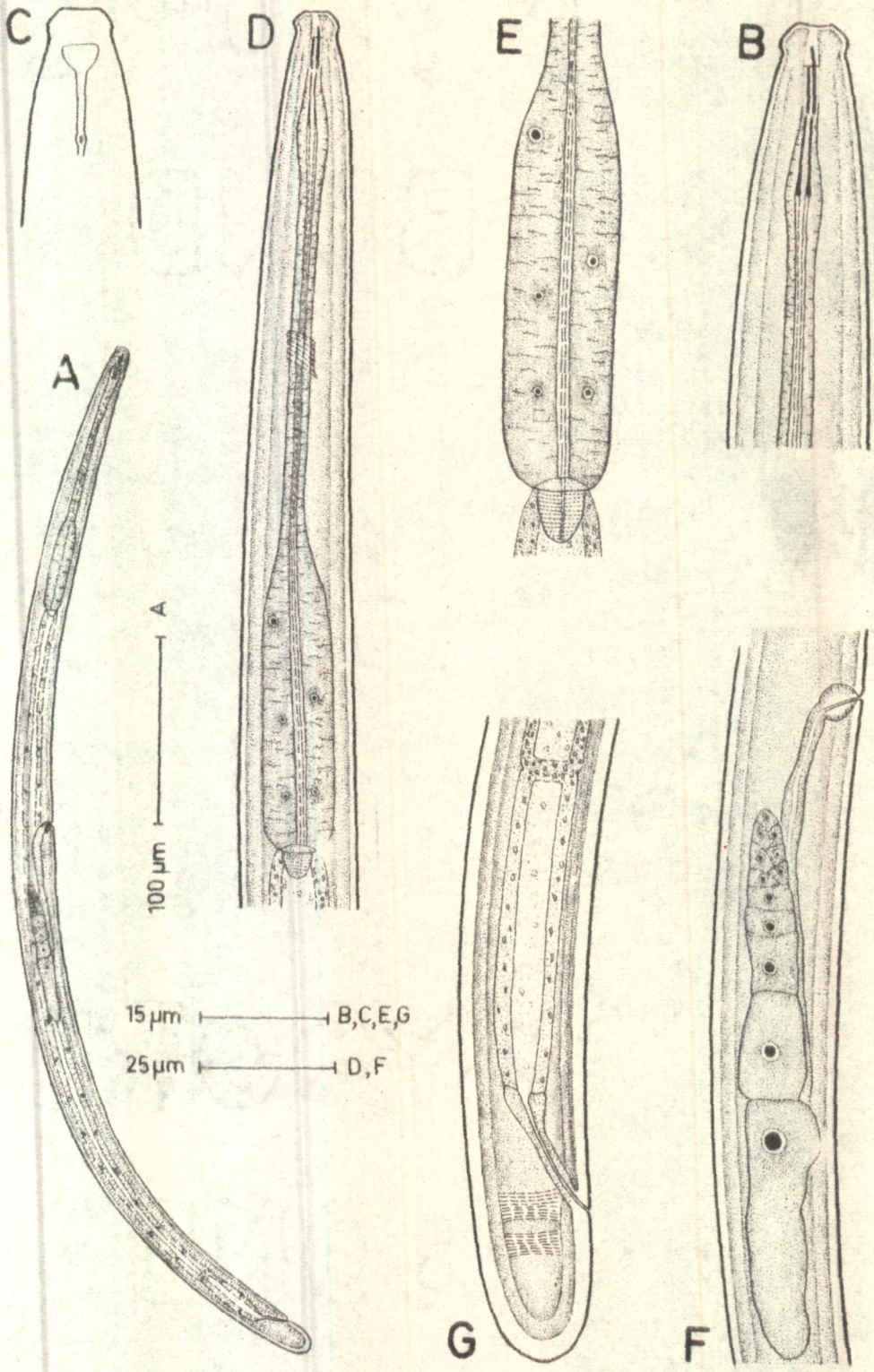

C
D
E
B
A
A
100 µm
15 µm
B,C,E,G
25 µm
D,F
G
F

Fig. 33

Chitwoodius goshenii

A - Anterior region,

B - Oesophageal region,

C - Vulval region (lateral),

D - Vulval region (dorsoventral)

E - Female posterior end,

F - Male posterior region,

G - Spicule and lateral guiding piece.

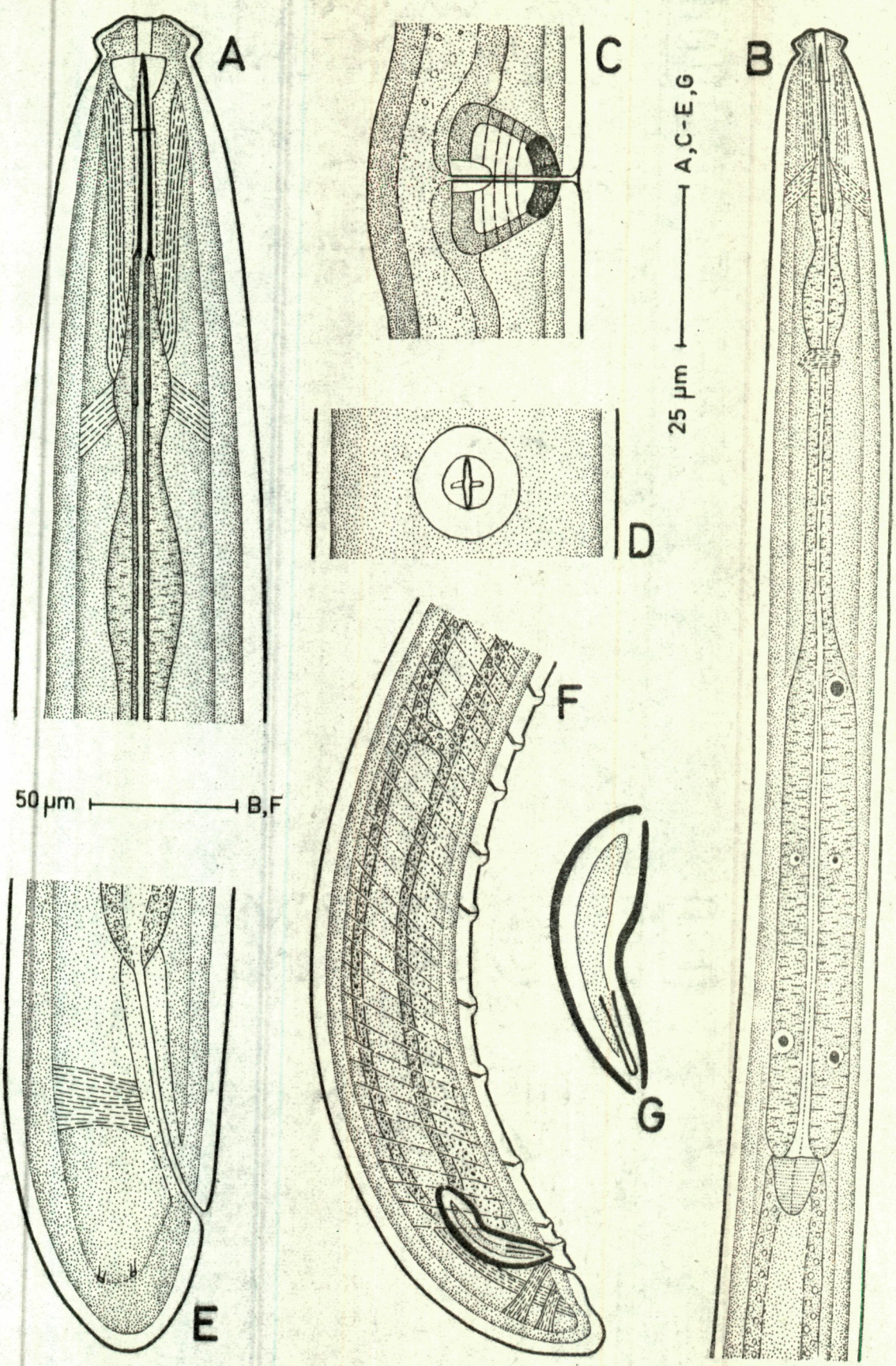

A
B
C
D
E
F
G
25 µm
A,C-E,G
50 µm
B,F

Fig. 34

Xiphinemella andrassyi n. sp.

A - Entire female.

B - Entire male.

C - Anterior region.

D - Oesophageal region.

E - Expanded part of oesophagus.

F - Female posterior end.

G - Male posterior region.

H - Spicule and lateral guiding piece.

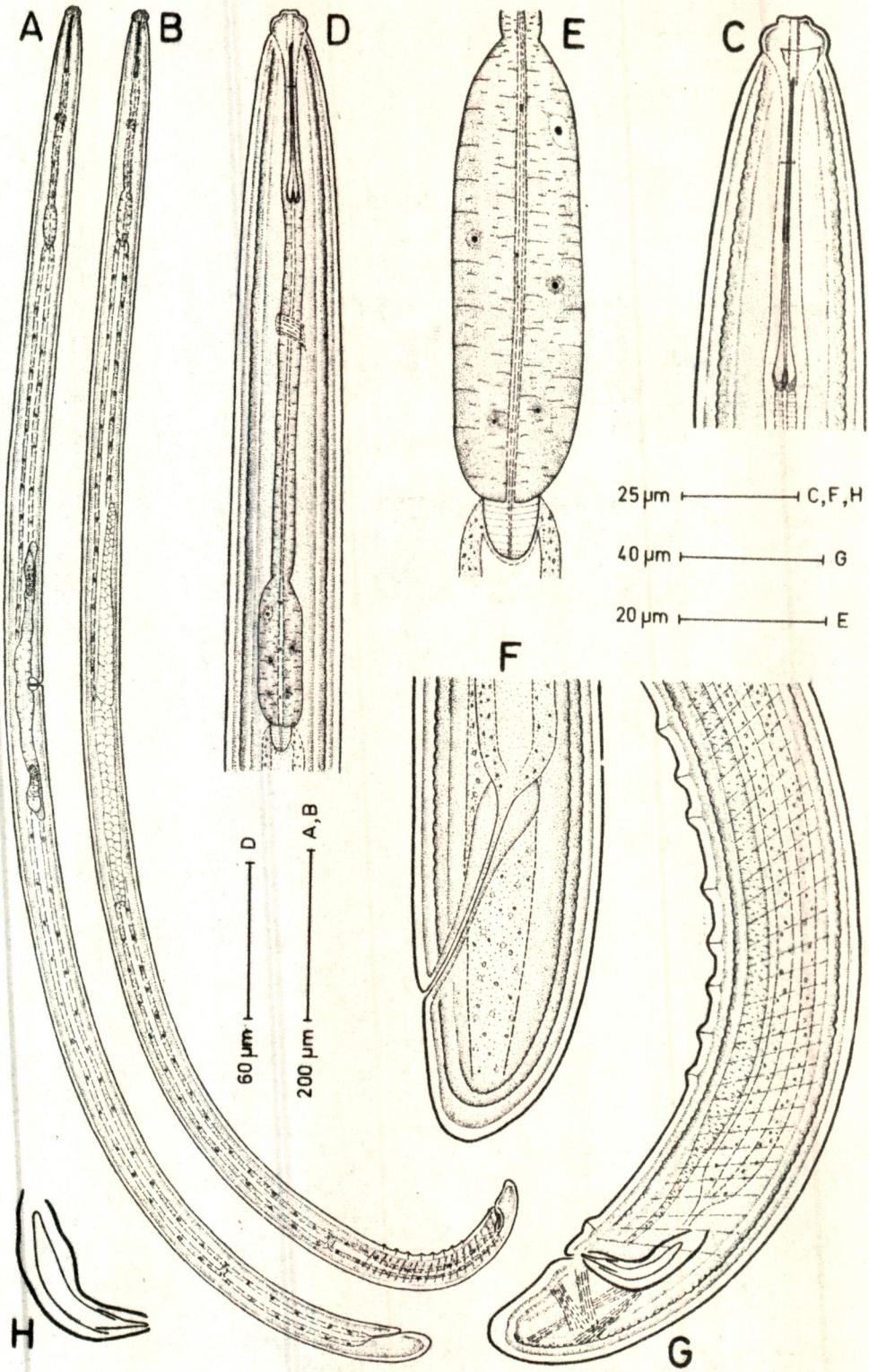

A
B
D
E
C
25 µm
C,F,H
40 µm
G
20 µm
E
F
D
60 µm
A,B
200 µm
H
G

Fig. 35

A - K *Necmetadorylaimus cocmanai*

A - Entire female,

B - Anterior region (lateral),

C - Anterior region (dorsoventral),

D - Odontostyle (lateral),

E - Odontostyle (dorsoventral),

F - Oesophageal region,

G - Oesophago-intestinal junction,

H - Female genital branch (posterior),

I - Vulval region (lateral)

J - Vulval region (dorsoventral),

K - Female posterior region.

L - P *Metadorylaimus pachylaimus*

L - Anterior region,

M - Odontostyle,

N - Oesophago-intestinal junction of juvenile,

O - Oesophago-intestinal junction of adult,

P - Vulval region (dorsoventral).

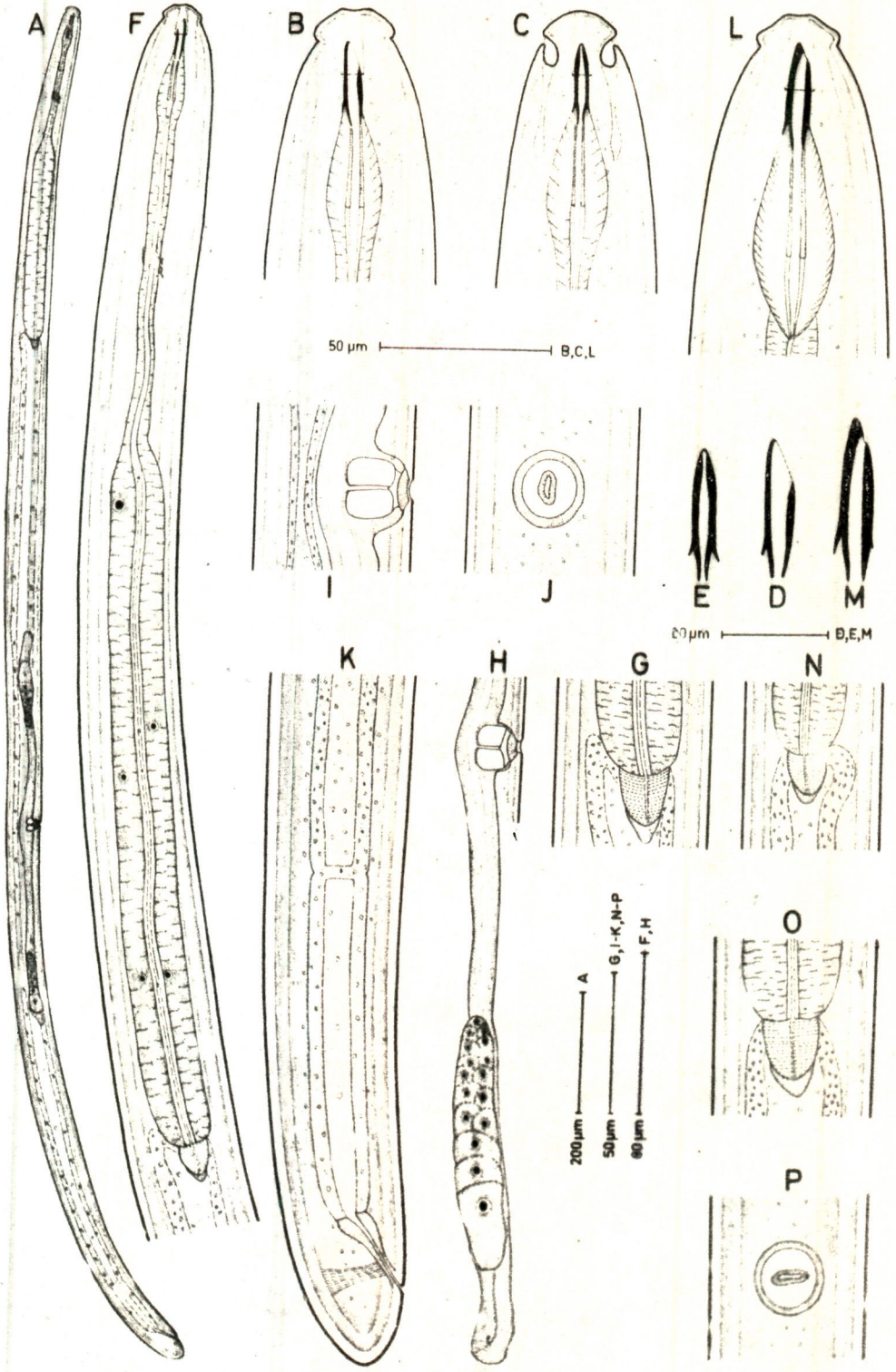

A
F
B
C
L
50 µm
B,C,L
I
J
E
D
M
20 µm
B,E,M
K
H
G
N
A
G,I-K,N-P
F,H
200µm
50µm
80µm
O
P

Fig. 36

Bycolaimellus heynsi n. sp.

A - Anterior region,

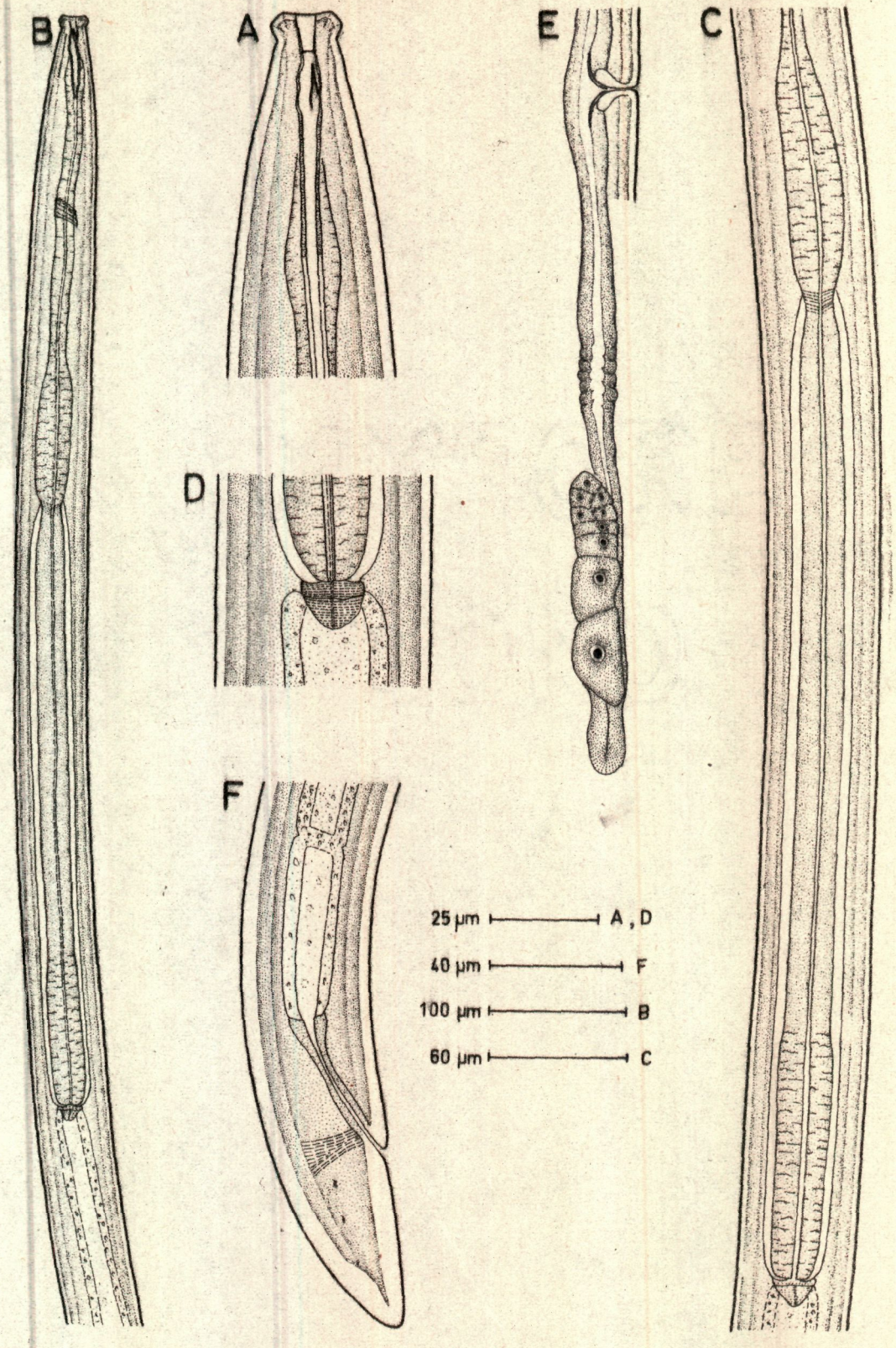
B - Oesophageal region,

C - Expanded part of oesophagus,

D - Oesophago-intestinal junction,

E - Female genital branch (posterior),

F - Female posterior region.


B
A
E
C
D
F
25 µm
A , D
40 µm
F
100 µm
B
60 µm
C